

HCD-MD515

RM-MD515

SERVICE MANUAL



US Model
AEP Model
UK Model
E Model
Tourist Model



RM-MD515

HCD-MD515

HCD-MD515 is the Amplifier, CD player, MD Deck and Tuner section and RM-MD515 is the Detachable Controller section in DHC-MD515.

U.S and foreign patents licensed from Dolby Laboratories Licensing Corporation.

CD Section	Model Name Using Similar Mechanism	NEW
	CD Mechanism Type	CDM48-5BD29
	Base Unit Name	BU-5BD29
	Optical Pick-up Name	KSS-213BA/F-NP
MD Section	Model Name Using Similar Mechanism	NEW
	MD Mechanism Type	MDM-C1D
	Base Unit Name	MBU-C1
	Optical Pick-up Name	KMS-260A/J1N

SPECIFICATIONS

Amplifier section

European model:

DIN power output (Rated)

30 + 30 watts
(6 ohms at 1 kHz, DIN,
230 V)

Continuous RMS power output (Reference)

40 + 40 watts
(6 ohms at 1 kHz,
10% THD)

Music power output (Reference)

60 + 60 watts

Other models:

DIN Power output (Rated)

30 + 30 watts (60 ohms at
1 kHz, DIN, 120/240 V)

Continuous RMS power output (Reference)

40 + 40 watts
(6 ohms at 1 kHz,
10% THD)

Peak music power output (Reference)

700 watts

Inputs

VIDEO/GAME IN (phono jacks) (switchable)

GAME IN:

voltage 450 mV,
impedance 47 kilohms
voltage 250 mV,
impedance 47 kilohms
voltage 250 mV,
impedance 47 kilohms

VIDEO IN:

TAPE IN (phono jacks):

Outputs

TAPE OUT (phono jacks): voltage 250 mV
impedance 1 kilohm

PHONES (stereo mini jack):

accepts headphones of 8
ohms or more.
accepts impedance of 6 to
16 ohms.

SPEAKER:

CD player section

System

Compact disc and digital
audio system

Laser

Semiconductor laser
($\lambda=780$ nm)

Laser output

Emission duration:
continuous
Max. 44.6 μ W*

Frequency response

*This output is the value
measured at a distance of
200 mm from the
objective lens surface on
the Optical Pick-up Block
with a 7 mm aperture.
2 Hz - 20 kHz

MINI Hi-Fi COMPONENT SYSTEM



SONY®

MD deck section

System	MiniDisc digital audio system
Laser	Semiconductor laser ($\lambda=780$ nm) Emission duration: continuous
Laser output	Max. $44.6 \mu\text{W}$ * *This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with a 7 mm aperture.
Recording time	74 minutes max. (using MDW-74)
Sampling frequency	44.1 kHz
Frequency response	5 Hz to 20 kHz

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range	
US model:	87.5 – 108.0 MHz (100 kHz step)
Tourist model:	76.0 – 108.0 MHz (50 kHz step)
Other models:	87.5 – 108.0 MHz (50 kHz step)
Antenna	FM lead antenna
Antenna terminals	75 ohm unbalanced
Intermediate frequency	10.7 MHz

AM tuner section

Tuning range	
US model:	
AM	531 – 1,710 kHz (with the interval set at 9 kHz) 530 – 1,710 kHz (with the interval set at 10 kHz)
European model:	
MW:	522 – 1,611 kHz (with the interval set at 9 kHz)
LW:	144 – 288 kHz (with the interval set at 3 kHz)
Other models:	
MW:	531 – 1,602 kHz (with the interval set at 9 kHz) 530 – 1,710 kHz (with the interval set at 10 kHz)
SW:	5.95 – 17.90 MHz
Antenna	AM loop antenna External antenna terminals
Intermediate frequency	450 kHz

General

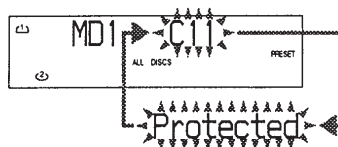
Power requirements	
US model:	120 V AC, 60 Hz
European model:	220 – 230 V AC, 50/60 Hz
Other models:	110 – 120 V or 220 – 240 V AC, 50/60 Hz adjustable with the voltage selector
Power consumption	85 watts
Dimensions	(With the controller attached) Approx. 215 x 290 x 400 mm (w/h/d) incl. projecting parts and controls (With the controller detached) Approx. 215 x 290 x 390 mm (w/h/d) incl. projecting parts and controls
Mass	Approx. 9.5 kg

Design and specifications are subject to change without notice.

SELF DIAGNOSTICS

Using the Self-Diagnostic Display

This system has the Self-Diagnostic function to let you know if there is a system malfunction. The display shows a code made up of three letters and a message alternately to show you the problem. To solve the problem, refer to the following list. If any problem persists, consult your nearest Sony dealer.



C11/MD Protected

The MD is protected against erasure.
→ Remove the MD and slide the tab to close the slot (page 33)

C13/REC Error

Recording is not possible.
→ Move the system to a stable place and start recording over from the beginning.
The MD is dirty or is scratched./The MD does not meet the standards.
→ Change the MD with another one and start recording over from the beginning.

C13/Disc Error

The MD deck cannot read the disc information correctly.
→ Eject the MD once, then insert it again.

C14/Disc Error

The MD deck cannot read the disc information correctly.
→ Change the MD with another one.
→ If you don't mind erasing all the recorded contents of the MD, erase them using the Erase function on page 48.

MD SECTION

1. OPERATING THE ERROR HISTORY MODE

All operations are performed using the [MULTI JOG] dial and [PROGRAM] button.

1. Enter the test mode for MD function. (*1)
2. Turn the [MULTI JOG] dial and display "ERR DP MODE".
3. Press the [ENTER/YES] button, therefore enter the error history mode and change the display "total rec".
4. Press the [EDIT/NO] button, therefore end the error history mode and change the display "ERR DP MODE".

(*1) See the "SECTION 4 TEST MODE" (page 21) for detail of test mode.

2. OPERATING THE DISPLAYED HISTORIES

1. Turn the [MULTI JOG] dial and change the display of error history contents.
2. Press the [PROGRAM] button and display error history function.
3. Press the [PROGRAM] button again and back the display of error history contents.

Table 1.

Contents	Function	Display
total rec	Total time of laser power high. About 20% of total recording time.	r00000h
total play	Total time of playback.	p000h
retry error	Total count of record and playback retry error.	r00 p00
total error	Total count of error.	total00
err history	Error contents display of from latest one "00" to last ten "09". (Turn the [MULTI JOG] dial and change the error NO.)	00 E00 (*2)
err refresh (*3)	Press the [PROGRAM] button and clear the error histories memory	complete

(*2) See table 1-1. for contents of each error code.

(*3) Error refresh with optical pick-up exchange, another not execute.

Table 1-1.

Display (error No./code)	Contents
0:0 E00	No error
0:0 E01	Disc error PTOC does not read
0:0 E02	Disc error UTOC does not read
0:0 E03	Loading error
0:0 E04	Address does not read
0:0 E05	Out of FOK
0:0 E06	Focus does not work
0:0 E07	Retry of record
0:0 E08	Record retry error
0:0 E09	Retry of Playback
0:0 E0A	Playback retry error

CD SECTION

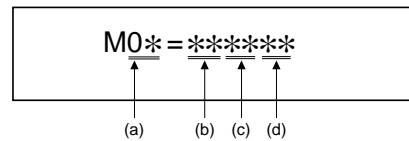
1. OPERATING THE DISPLAYED HISTORIES

1. Press the [DIMMER] button, [DBFB] button, and [CD 1▲] button simultaneously and enter the test mode.
2. Press the [PROGRAM] button, and mechanical error count and the count of "NO DISC" that optical system judged are displayed.
3. Under this condition press the buttons in Table 2, and the respective operations are executed as listed below.

Table 2.

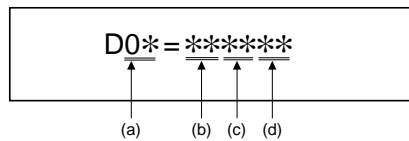
Button	Function
MD/CD 1	Mechanical error cord from latest one to last ten are displayed each time this button is pressed. (*1)
MD/CD 2	The reasons of "NO DISC" from latest one to last ten are displayed each time this button is pressed. (*2)
CD 1▲	Reset the count of mechanical error.
CD 2▲	Reset the count of "NO DISC".

(*1) Mechanical error code



- (a) The number of Mechanical error.
Latest one "00" to last ten "09"
(Turn the [MULTI JOG] dial and change the error No.)
- (b) "FF": Mechanical error, when mechanical initialize to completion.
Others: Mechanical error in the midst of mechanical initialize.
- (c) "4*": Mechanical error in the midst of mechanical initialize, when sub tray set into the stocker.
"5*": Mechanical error in the midst of mechanical initialize, when sub tray take out to the stocker.
- (d) "2*": Mechanical error in the midst of elevator moving.

(*2) NO DISC error code



- (a) The number of NO DISC error.
Latest one "00" to last ten "09"
(Turn the [MULTI JOG] dial and change the error No.)
- (b) "01": Focus error
"02": GFS error
"03": Set up error
- (c) "00": NO DISC error (Does not chucking retry)
"02": NO DISC error (Chucking retry to completion)
- (d) The status, when judged NO DISC error.
"3*": Stop
"4*": Set up
"5*": TOC read
"6*": Access
"7*": Play
"8*": Pause
"9*": Manual search (Play)

SECTION 1

SERVICING NOTES

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NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.

During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.

The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 °C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering

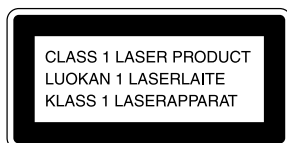
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK \triangle OR DOTTED LINE WITH MARK \triangle ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

CAUTION

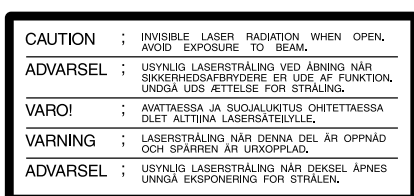
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.



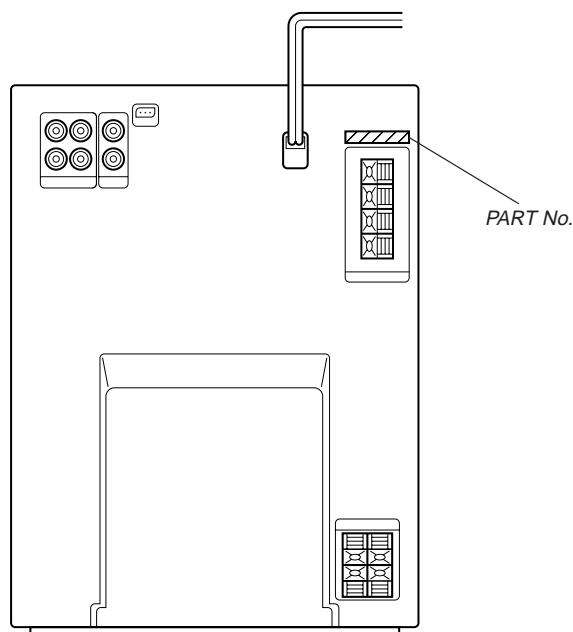
Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

The following caution label is located inside the unit.



MODEL IDENTIFICATION

– Back Panel –



MODEL	PARTS No.
AEP, UK, German and North European models	4-993-619-1□
Malaysia and Singapore models	4-993-619-2□
Hong Kong model	4-993-619-3□
US model	4-993-619-4□
Tourist model	4-993-619-6□

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer: Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes.). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers’ instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

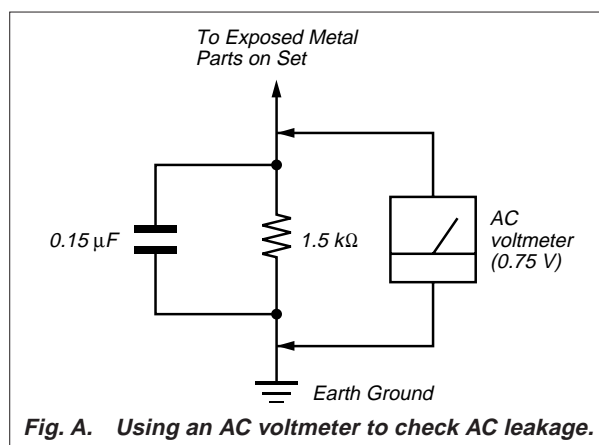
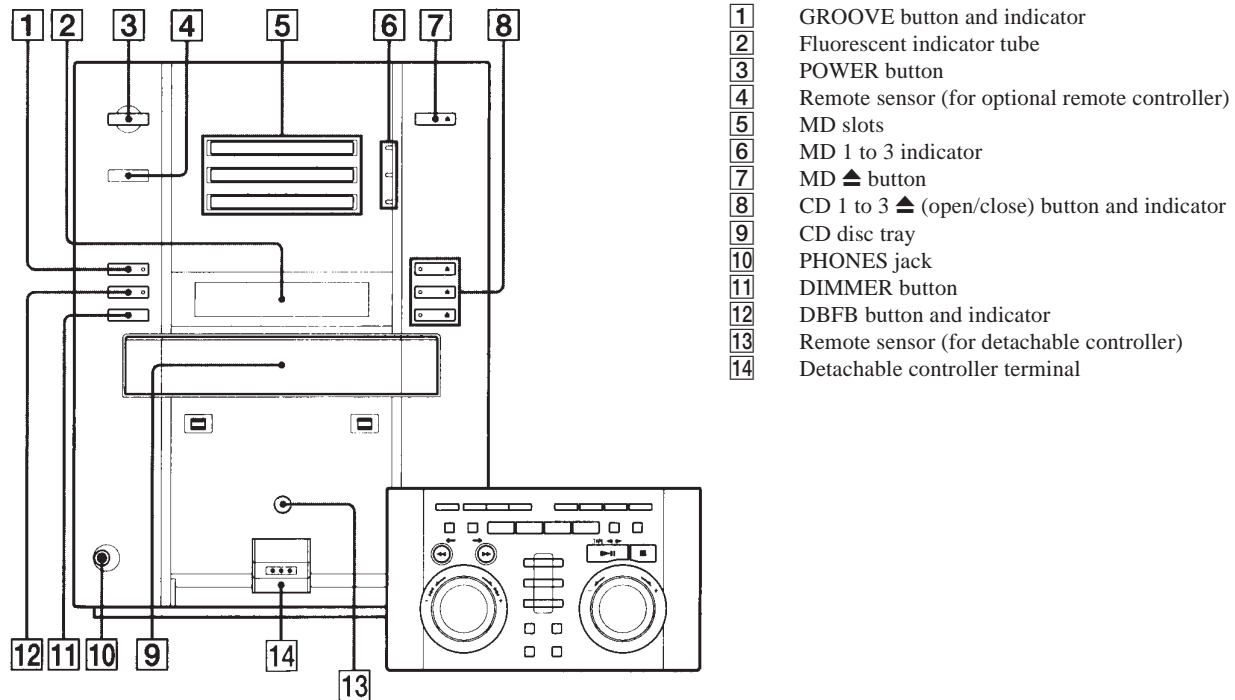


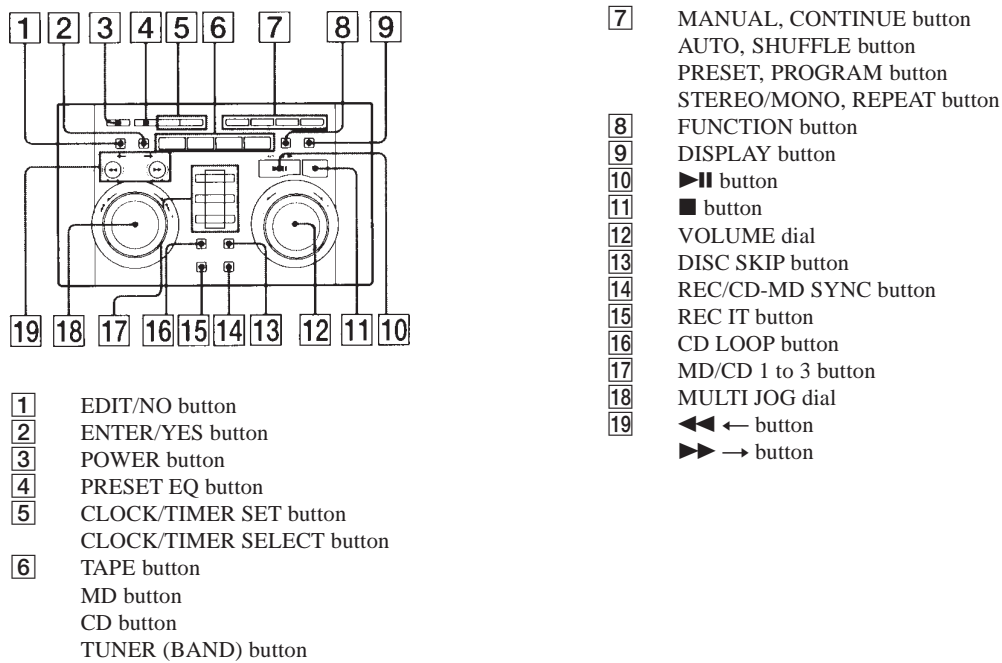
Fig. A. Using an AC voltmeter to check AC leakage.

SECTION 2 GENERAL

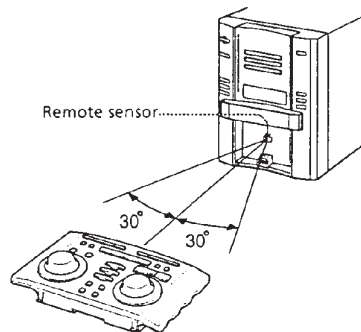
LOCATION OF CONTROLS – Main Unit (HCD-MD515) –



– Detachable Controller (RM-MD515) –



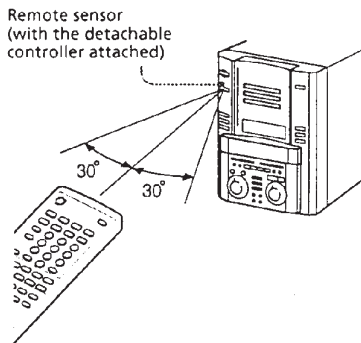
Using the detachable controller from a distance



Point the detachable controller at the remote sensor on the main unit.

To use an optional remote

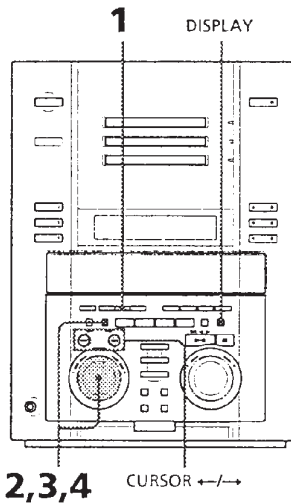
When using an optional remote with the detachable controller attached, point it at the remote sensor in the upper left corner of the main unit.



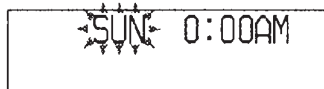
When the detachable controller is detached, point an optional remote at the remote sensor at the bottom of the main unit. The remote sensor in the upper left corner of the main unit does not work when the detachable controller is detached.

Step 2: Setting the time

You must set the time before you can use the timer functions. The clock is on a 24-hour system for the European model, and a 12-hour system for other models. The 12-hour system is used for illustration purpose. You can set the time while the power is off.



- 1 Press CLOCK/TIMER SET. The day of the week indication ("SUN") flashes.

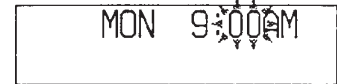


- 2 Turn MULTI JOG to set the day of the week, then press ENTER/YES. The hour indication flashes.



Step 2: Setting the time (continued)

- 3 Turn MULTI JOG to set the hour, then press ENTER/YES. The minute indication flashes.



- 4 Turn MULTI JOG to set the minute, then press ENTER/YES. The clock starts.

If you have made a mistake

Press CURSOR ← or → repeatedly so that the incorrect setting flashes, then set it again.

To change the preset time

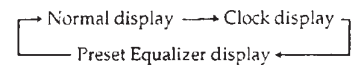
You can set the time or change the preset time while the power is on.

- 1 Press CLOCK/TIMER SET.
- 2 Turn MULTI JOG until "SET CLOCK ?" appears.
- 3 Press ENTER/YES.
- 4 Repeat steps 2 through 4 above.

To display the clock

The built-in clock shows the time in the display while the power is off. To display the time while the power is on, press DISPLAY.

Each time you press the button, the display changes as follows:

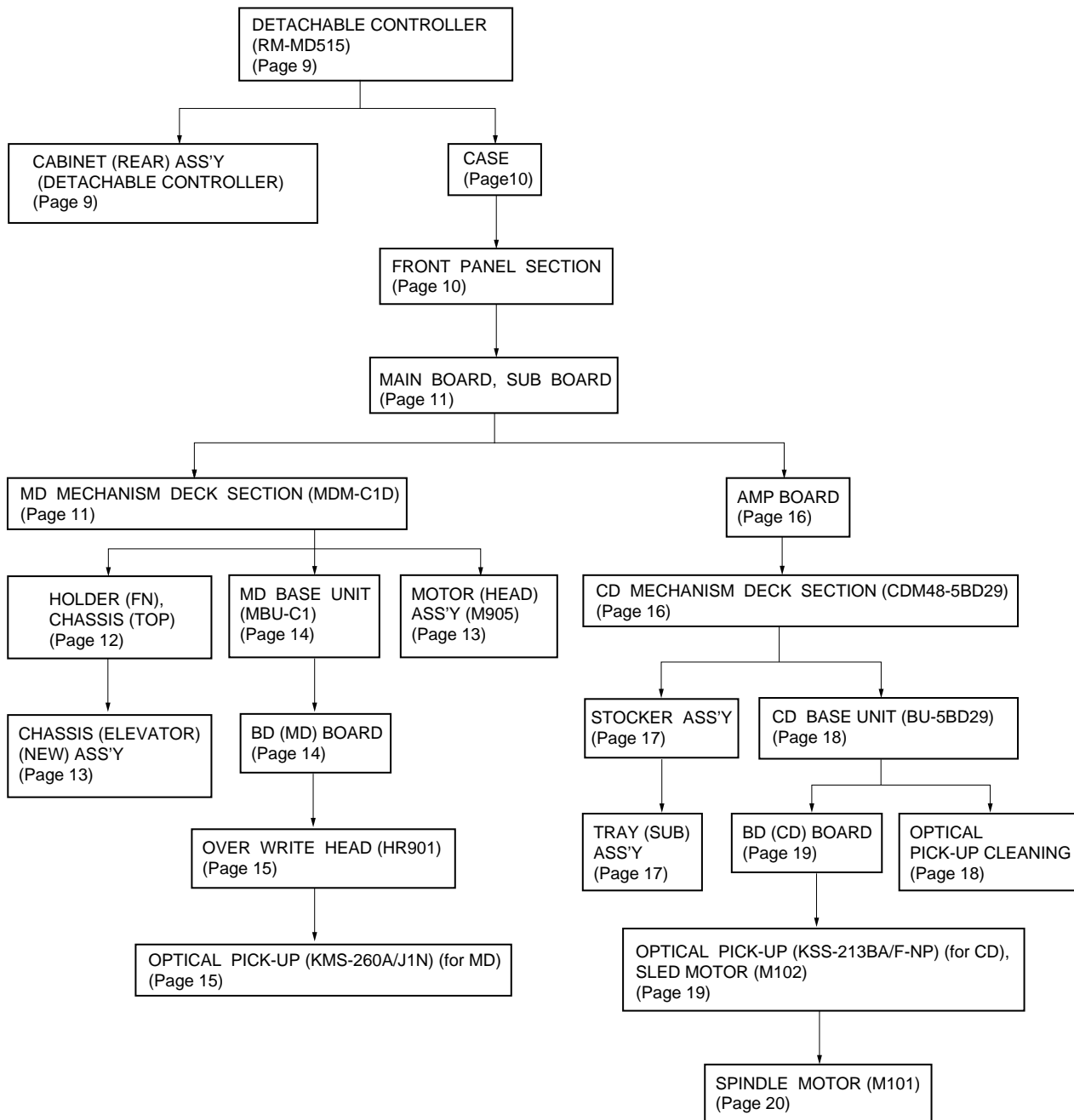


Tip

The upper dot flashes for the first half of a minute (0 to 29 seconds), and the lower dot flashes for the last half of a minute (30 to 59 seconds).

SECTION 3 DISASSEMBLY

- This set can be disassembled in the order shown below.



Note: Follow the disassembly procedure in the numerical order given.

DETACHABLE CONTROLLER (RM-MD515)

2 Detachable controller (RM-MD515)
to direction of the arrow.

1 two claws

CABINET (REAR) ASS'Y (DETACHABLE CONTROLLER)

3 Hold the arrow **B**
of cabinet (front) ass'y.

5 connector
(CN2)

4 Remove eighth claws as
turn the cabinet (rear) ass'y
to direction of the arrow **C**.

two claws

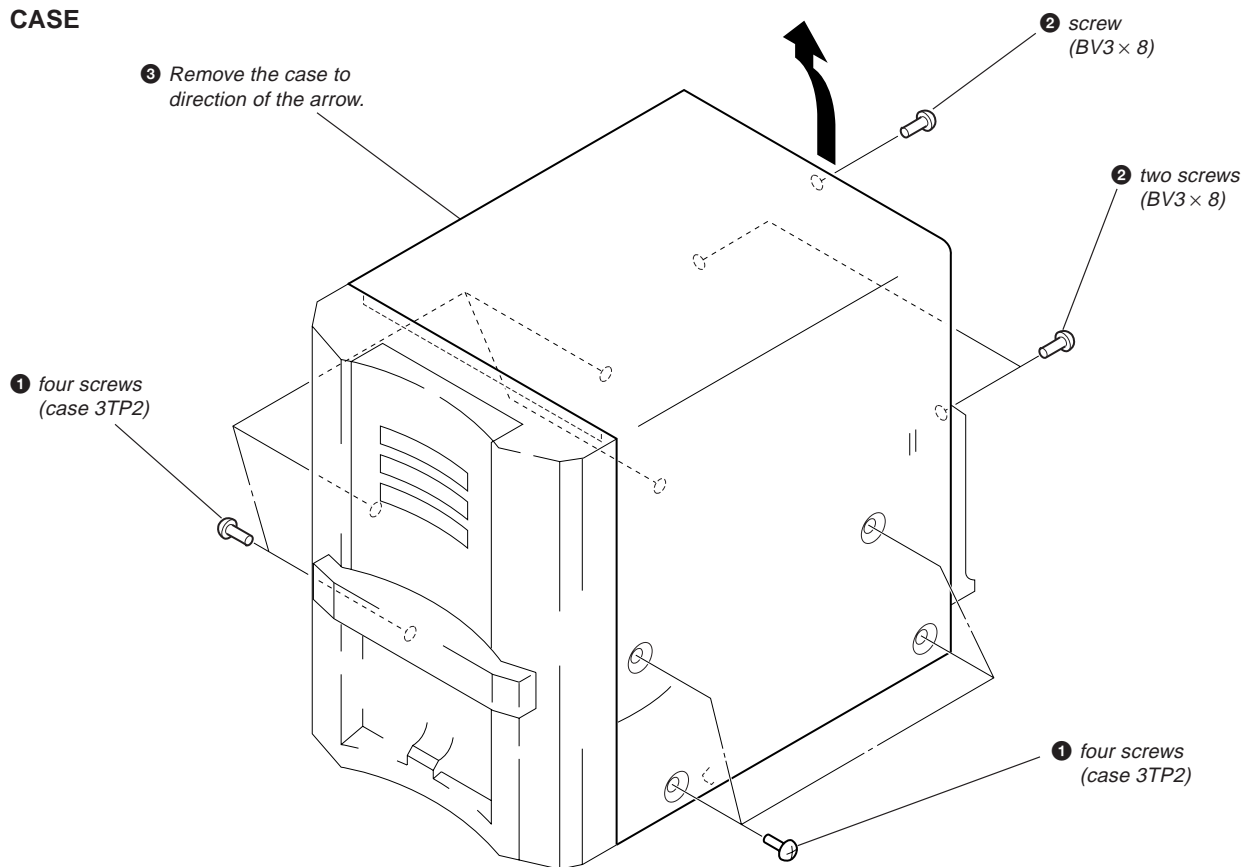
three claws

1 Remove the battery
case lid to direction
of the arrow **A**.

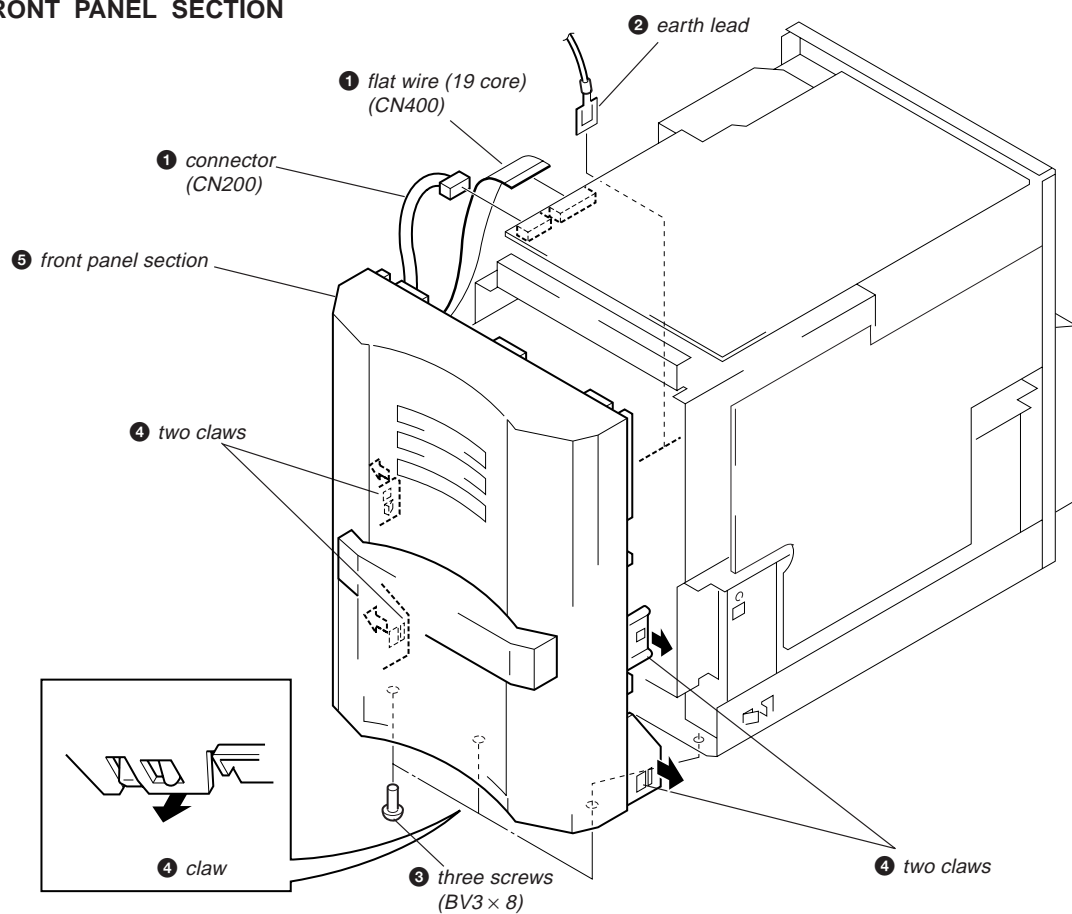
2 seventh screws
(P2 × 4)

three claws

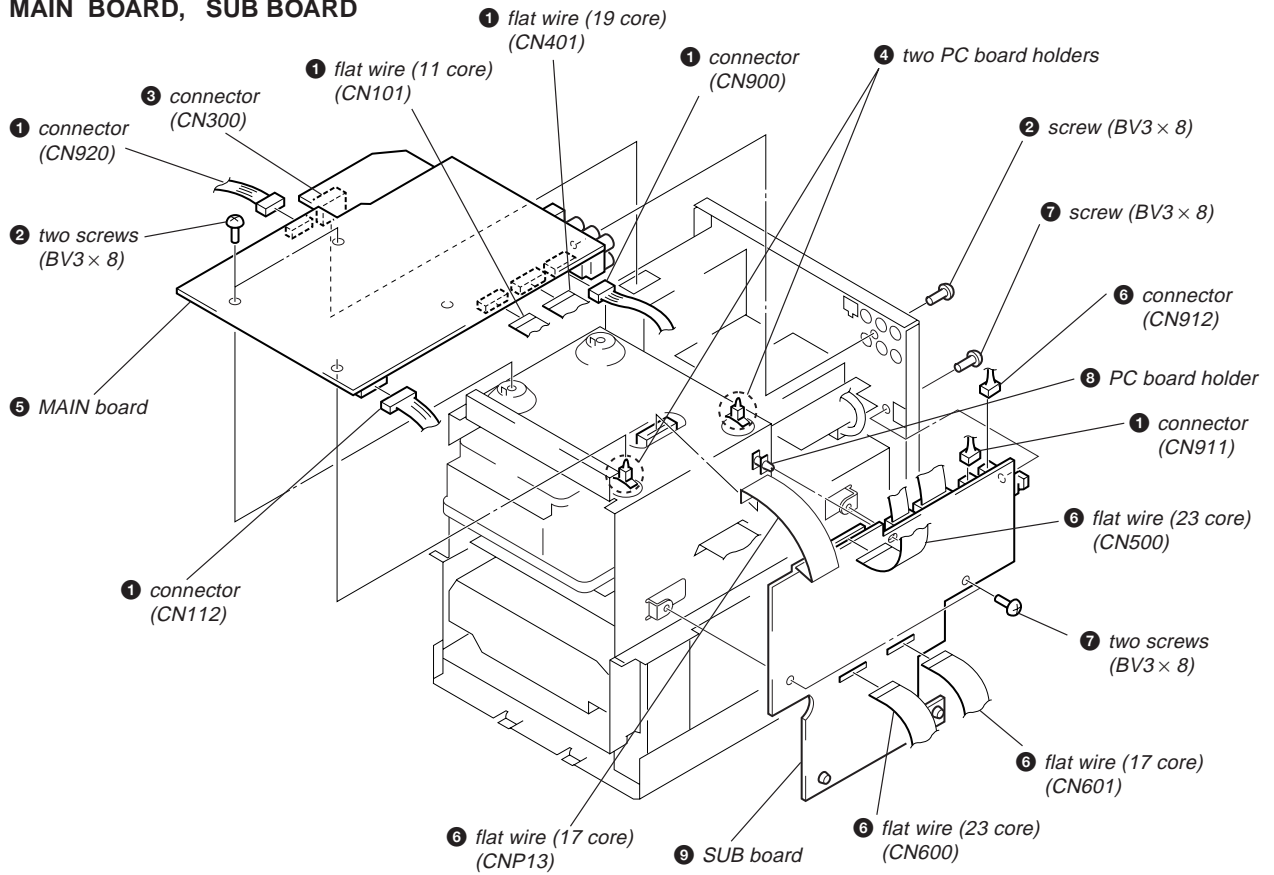
CASE



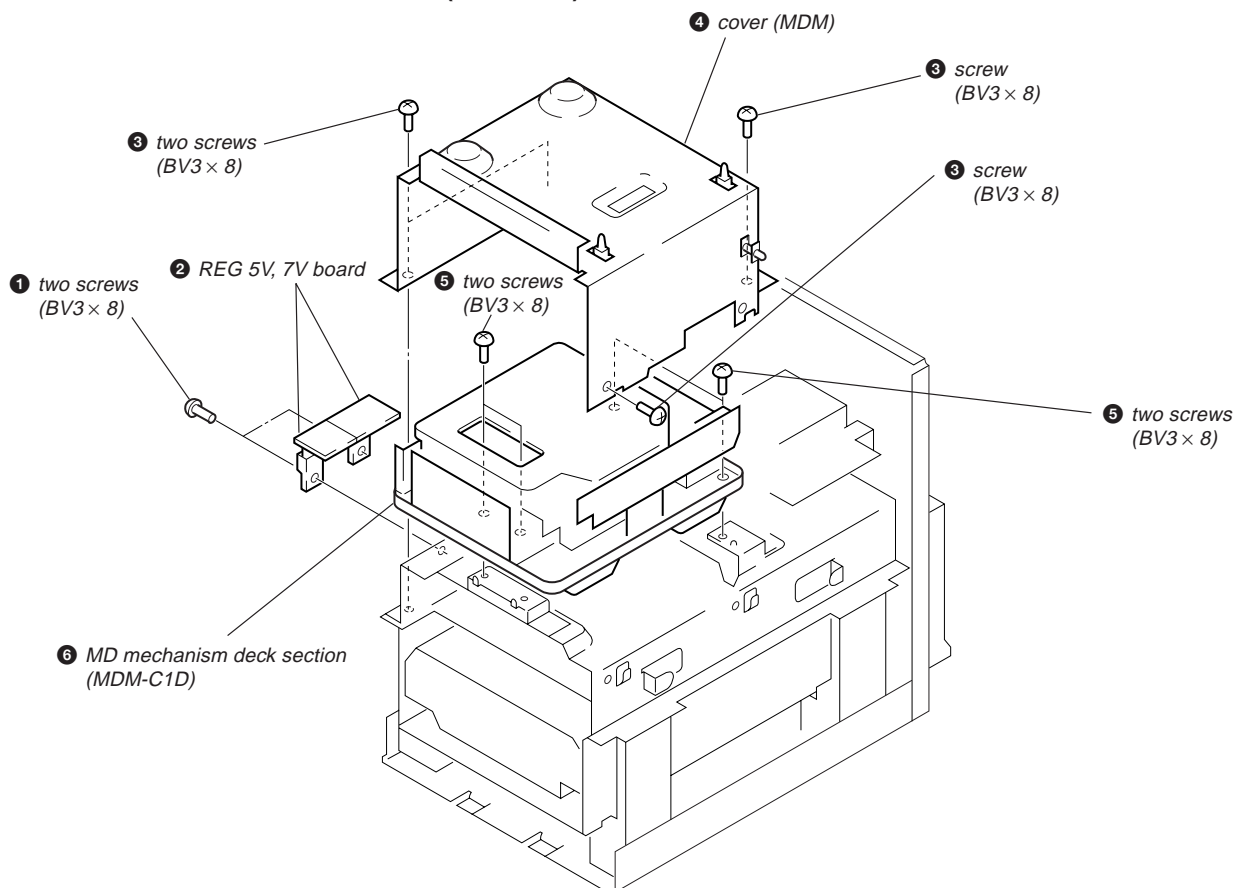
FRONT PANEL SECTION



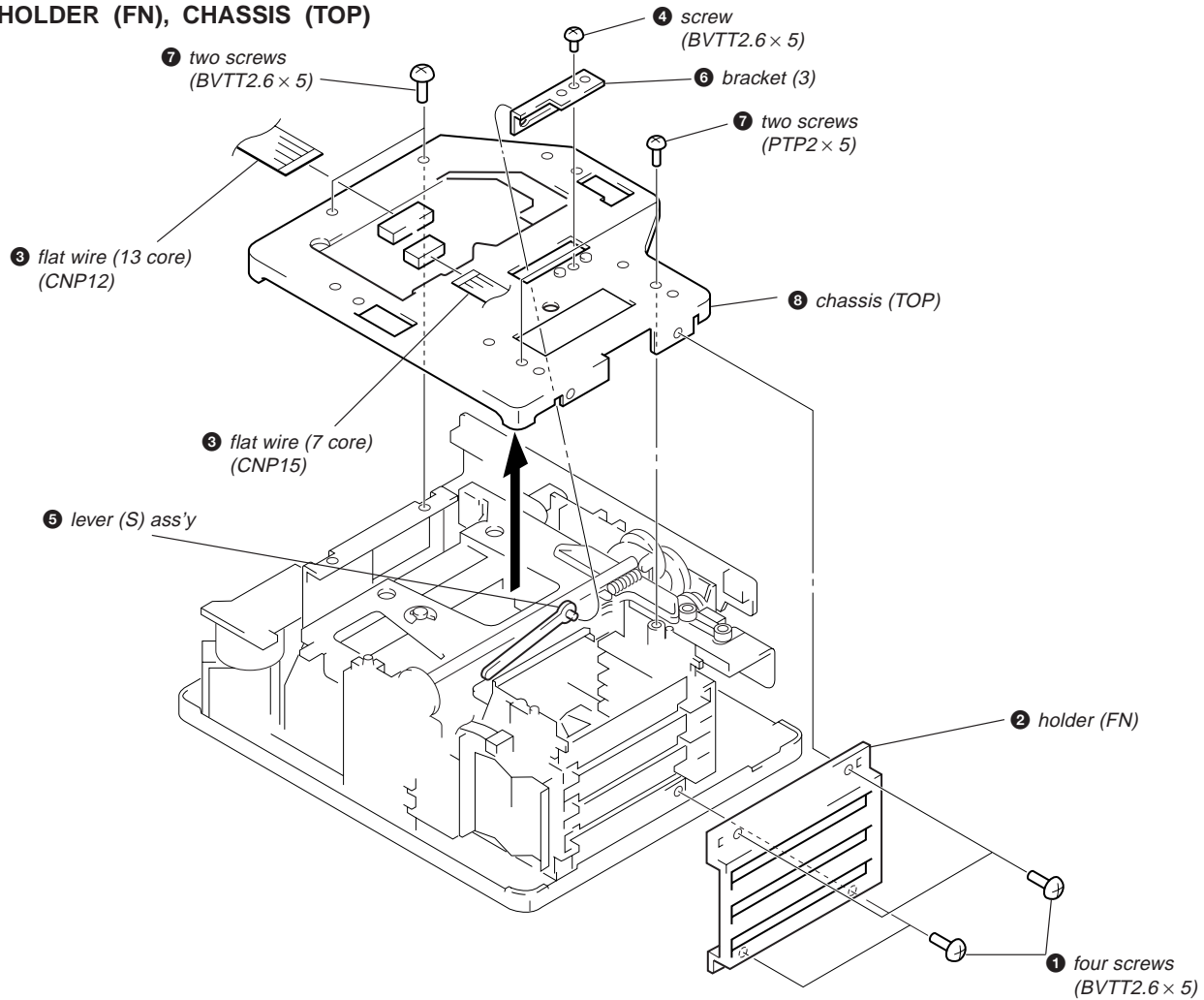
MAIN BOARD, SUB BOARD



MD MECHANISM DECK SECTION (MDM-C1D)

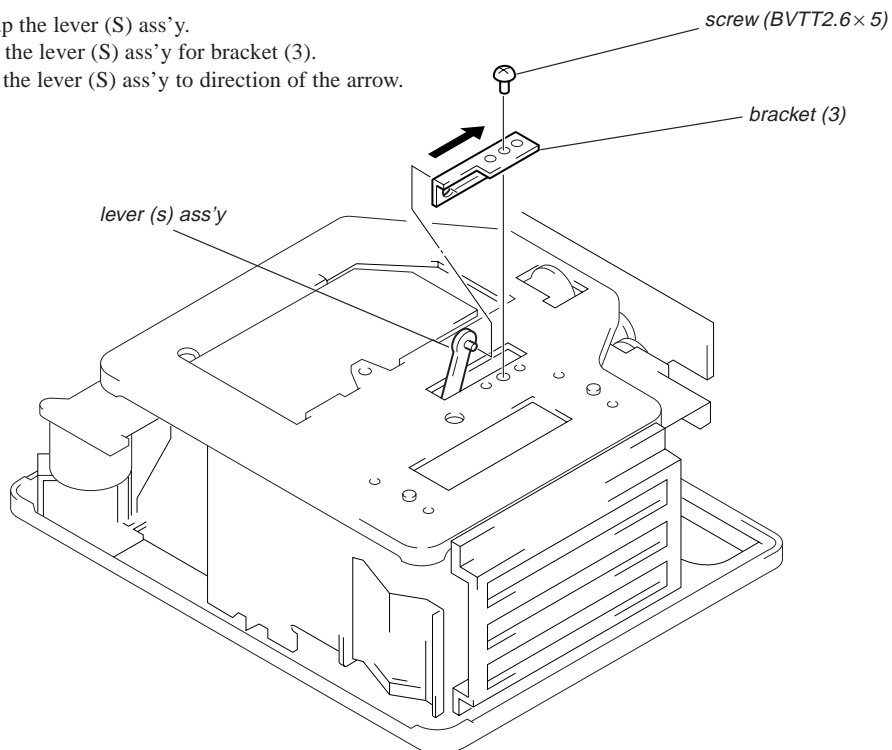


HOLDER (FN), CHASSIS (TOP)



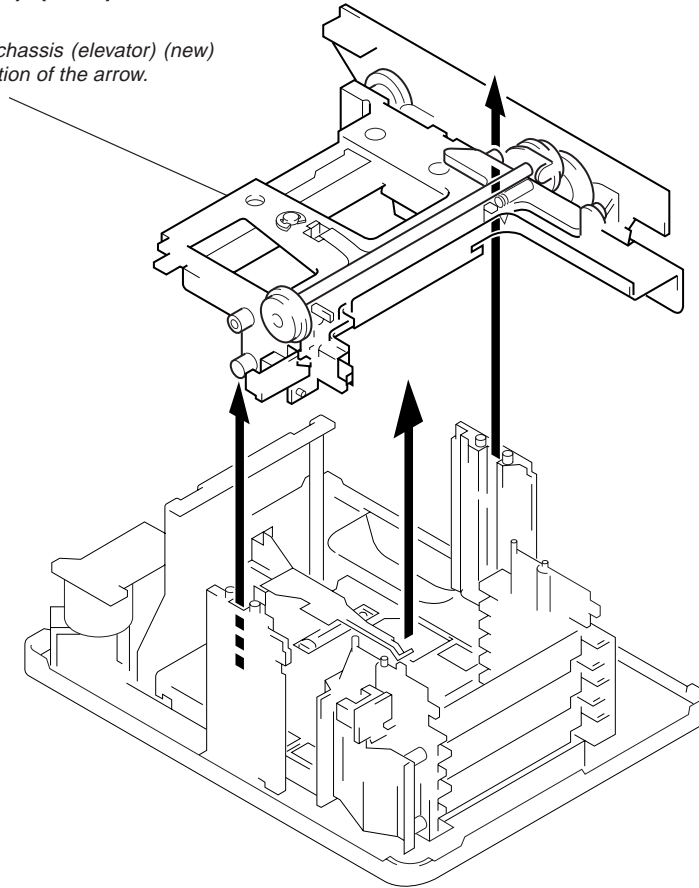
NOTE FOR INSTALLATION OF BRACKET (3)

- ① Lift up the lever (S) ass'y.
- ② Hang the lever (S) ass'y for bracket (3).
- ③ Slide the lever (S) ass'y to direction of the arrow.

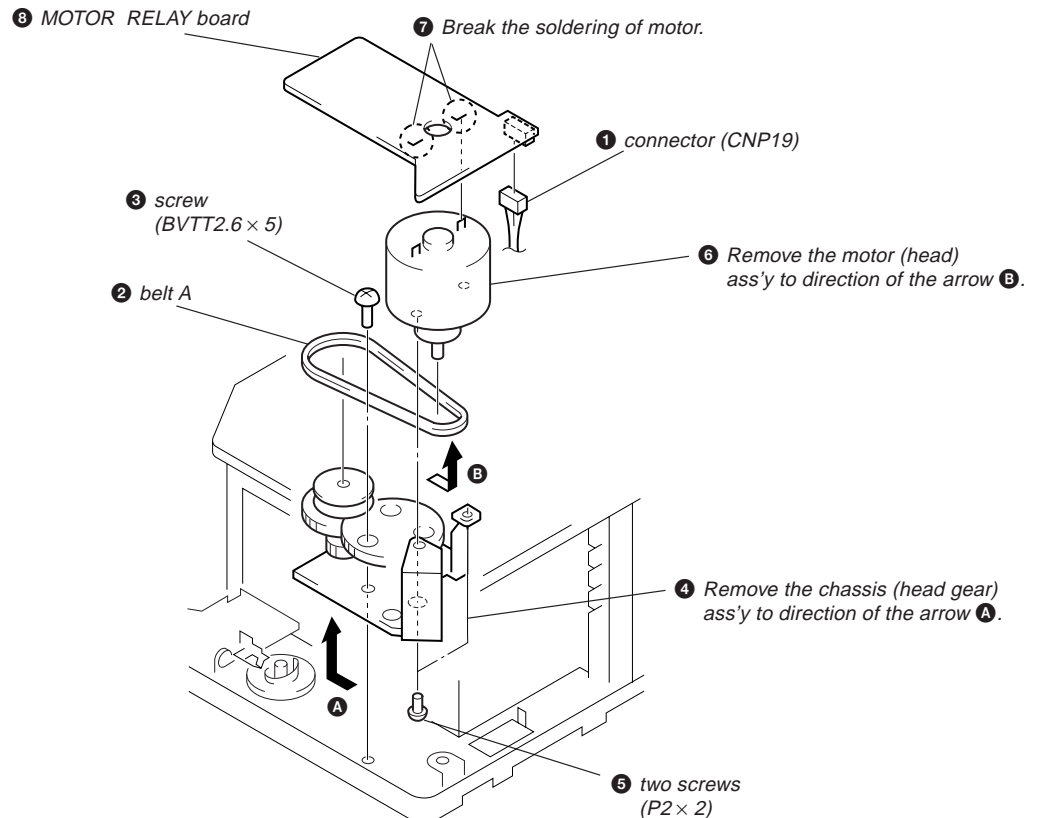


CHASSIS (ELEVATOR) (NEW) ASS'Y

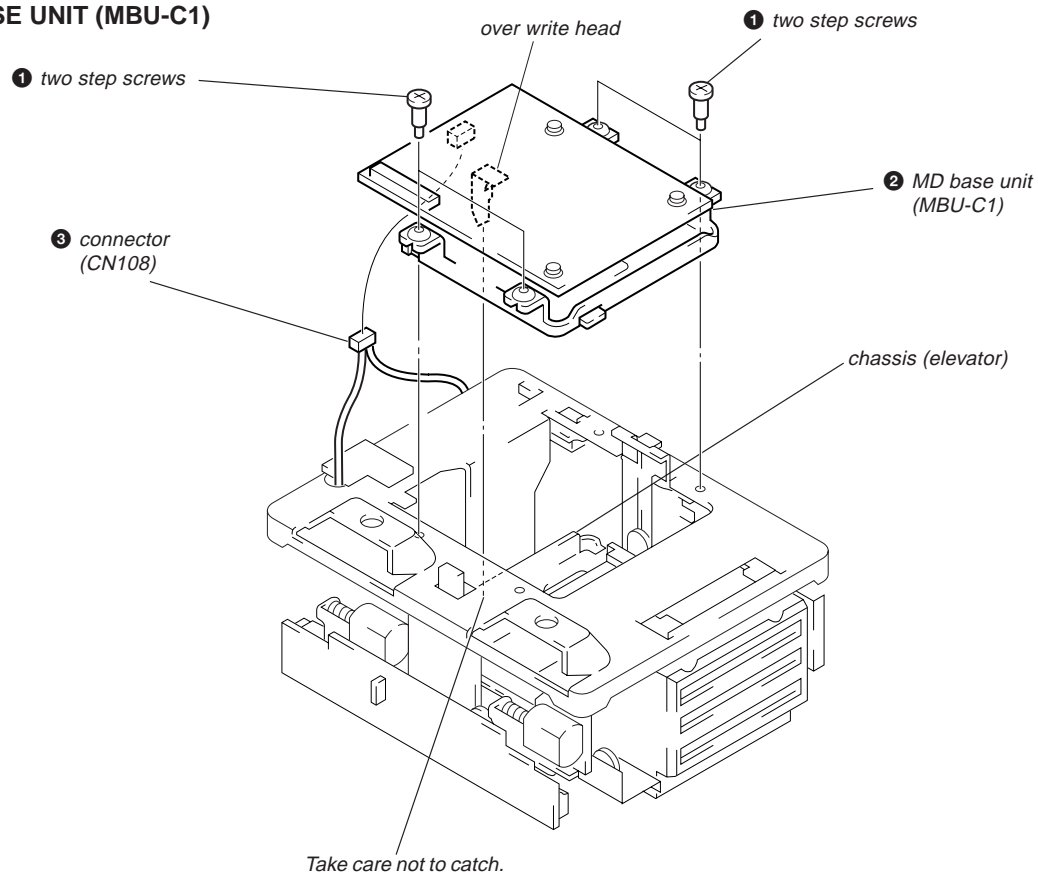
- ① Remove the chassis (elevator) (new) ass'y to direction of the arrow.



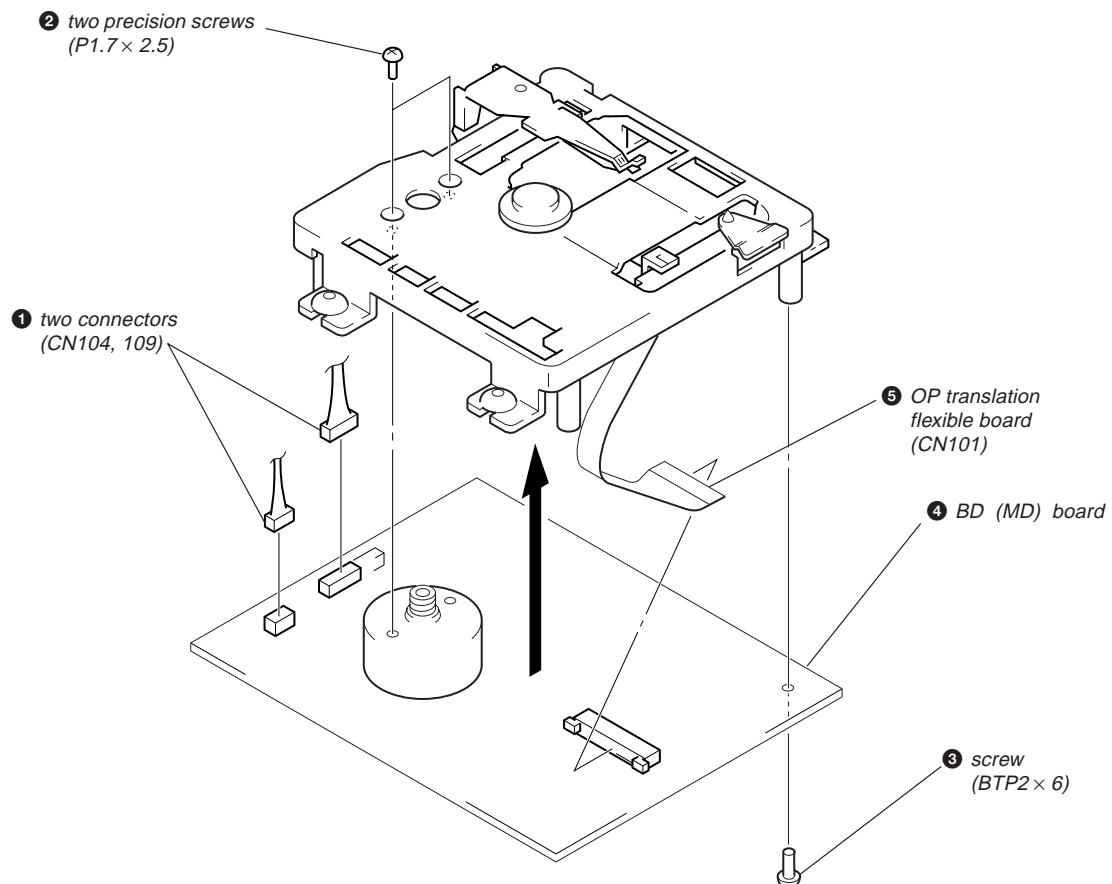
MOTOR (HEAD) ASS'Y (M905)



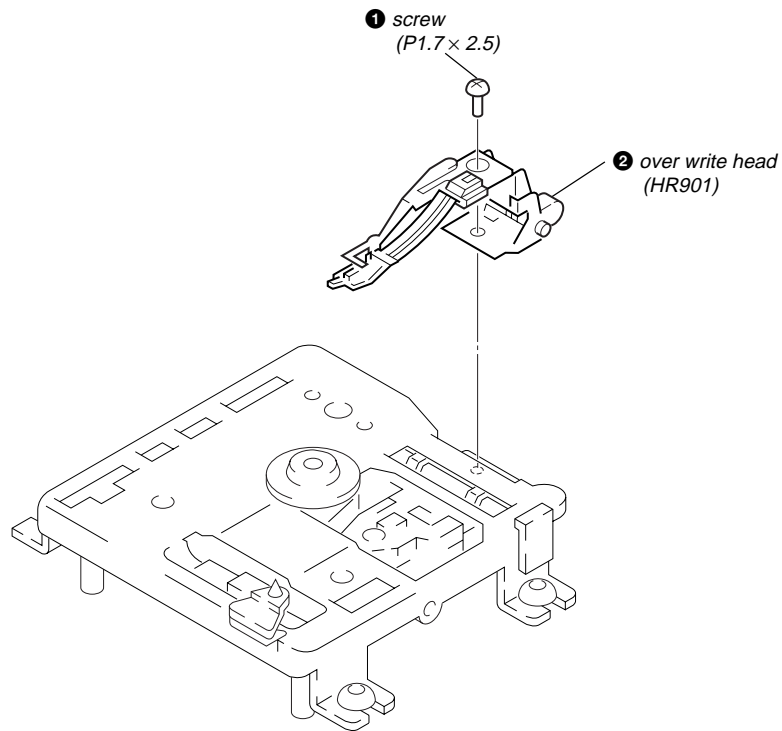
MD BASE UNIT (MBU-C1)



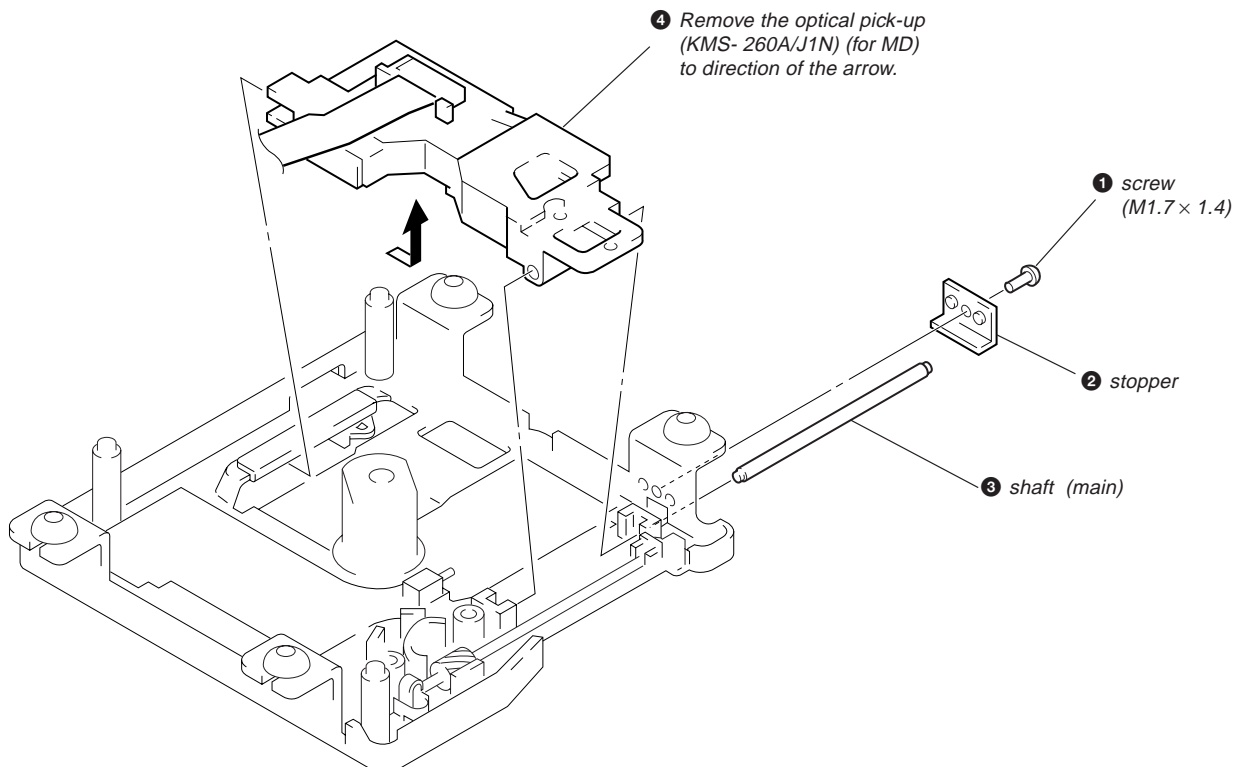
BD (MD) BOARD



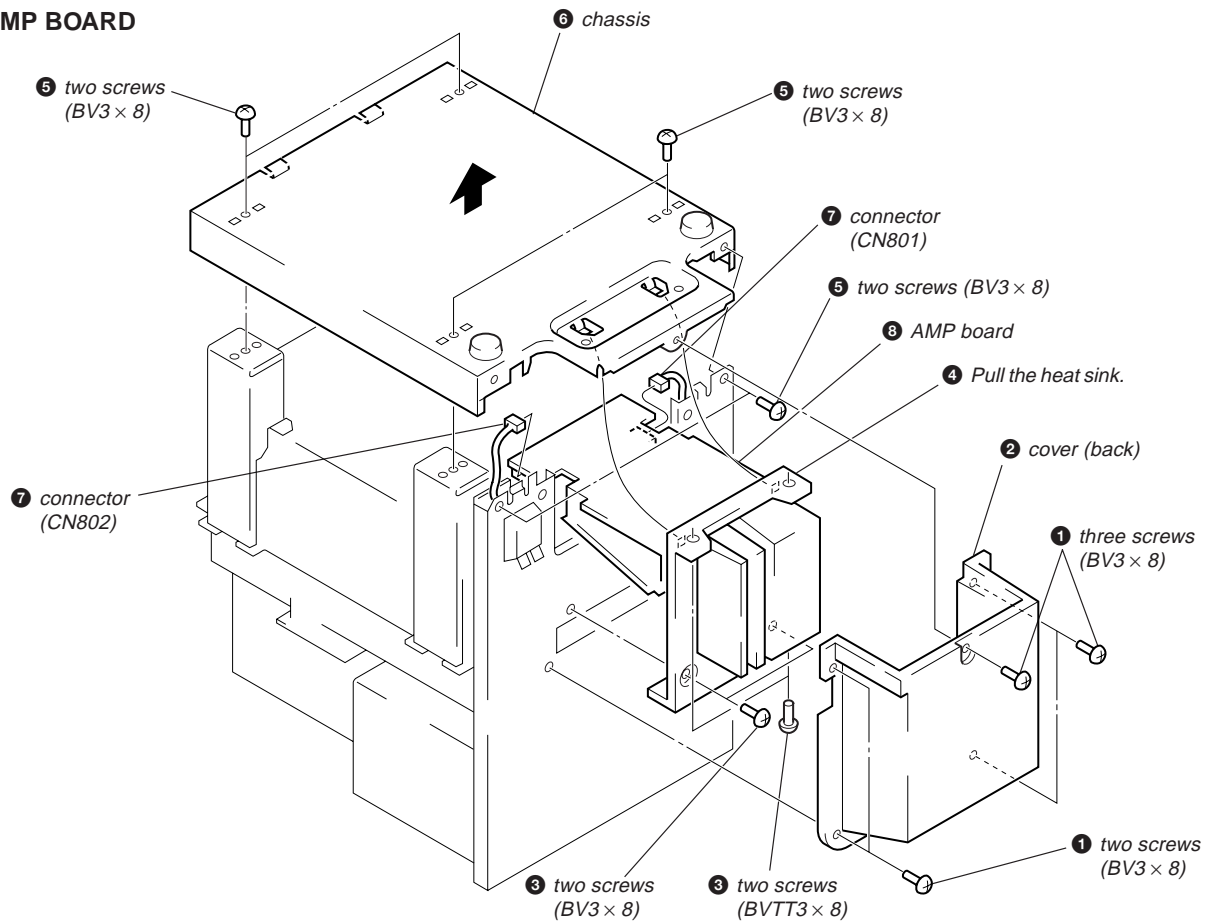
OVER WRITE HEAD (HR901)



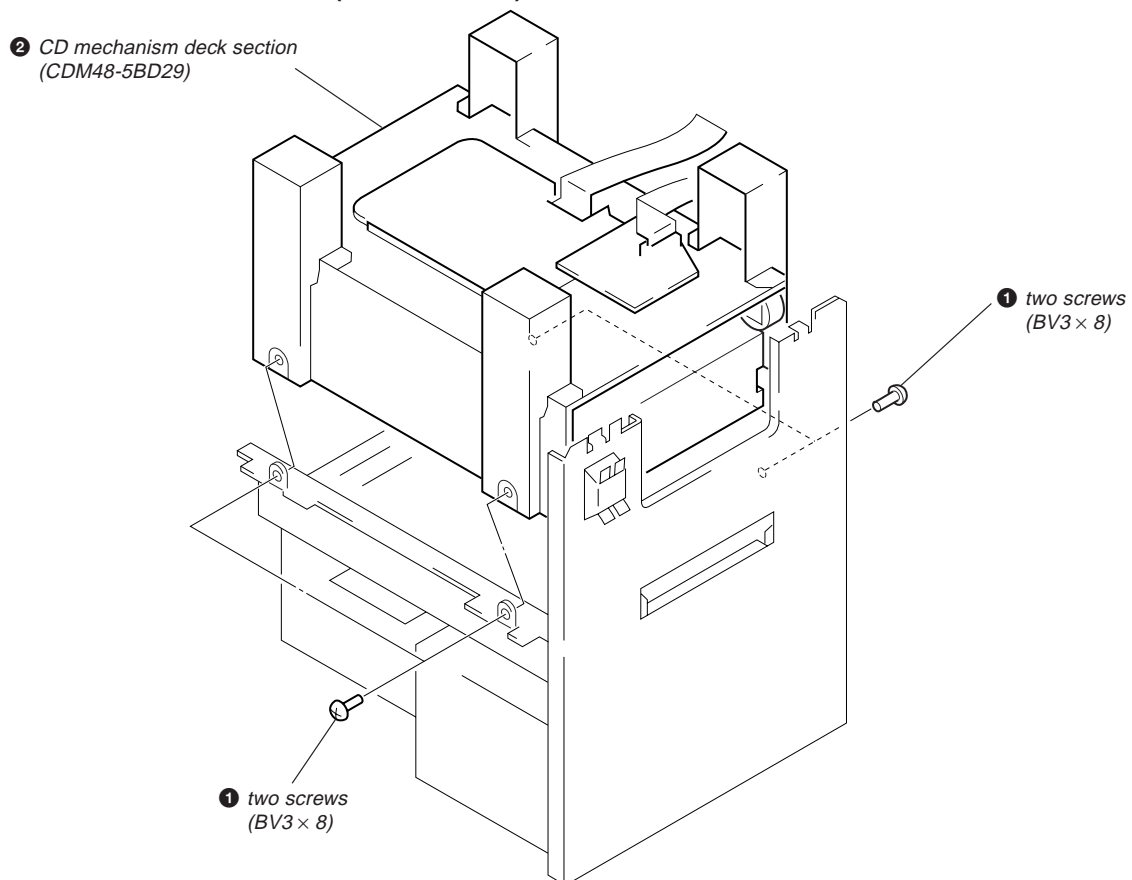
OPTICAL PICK-UP (KMS-260A/J1N) (for MD)



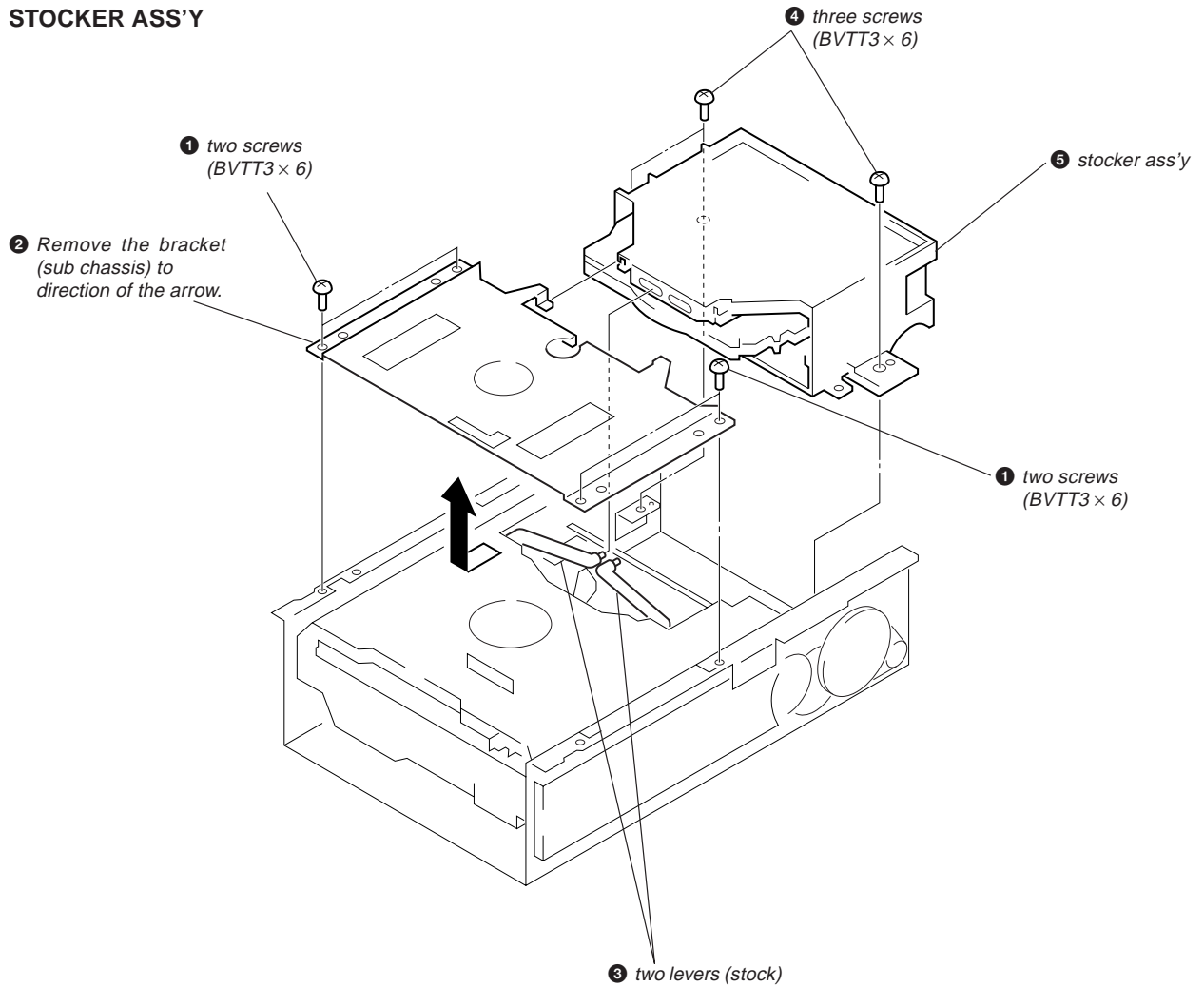
AMP BOARD



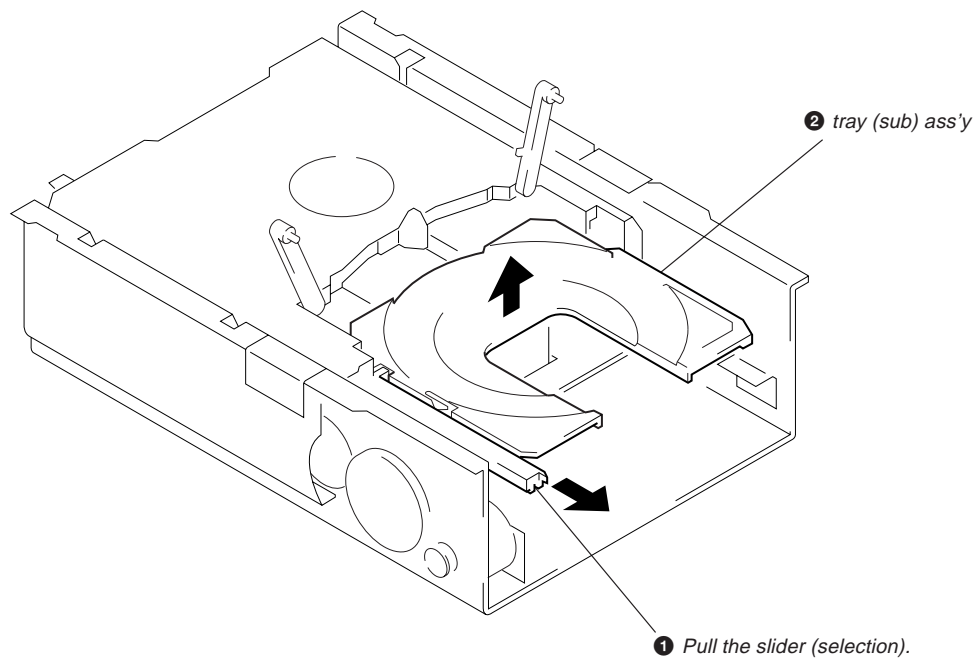
CD MECHANISM DECK SECTION (CDM48-5BD29)



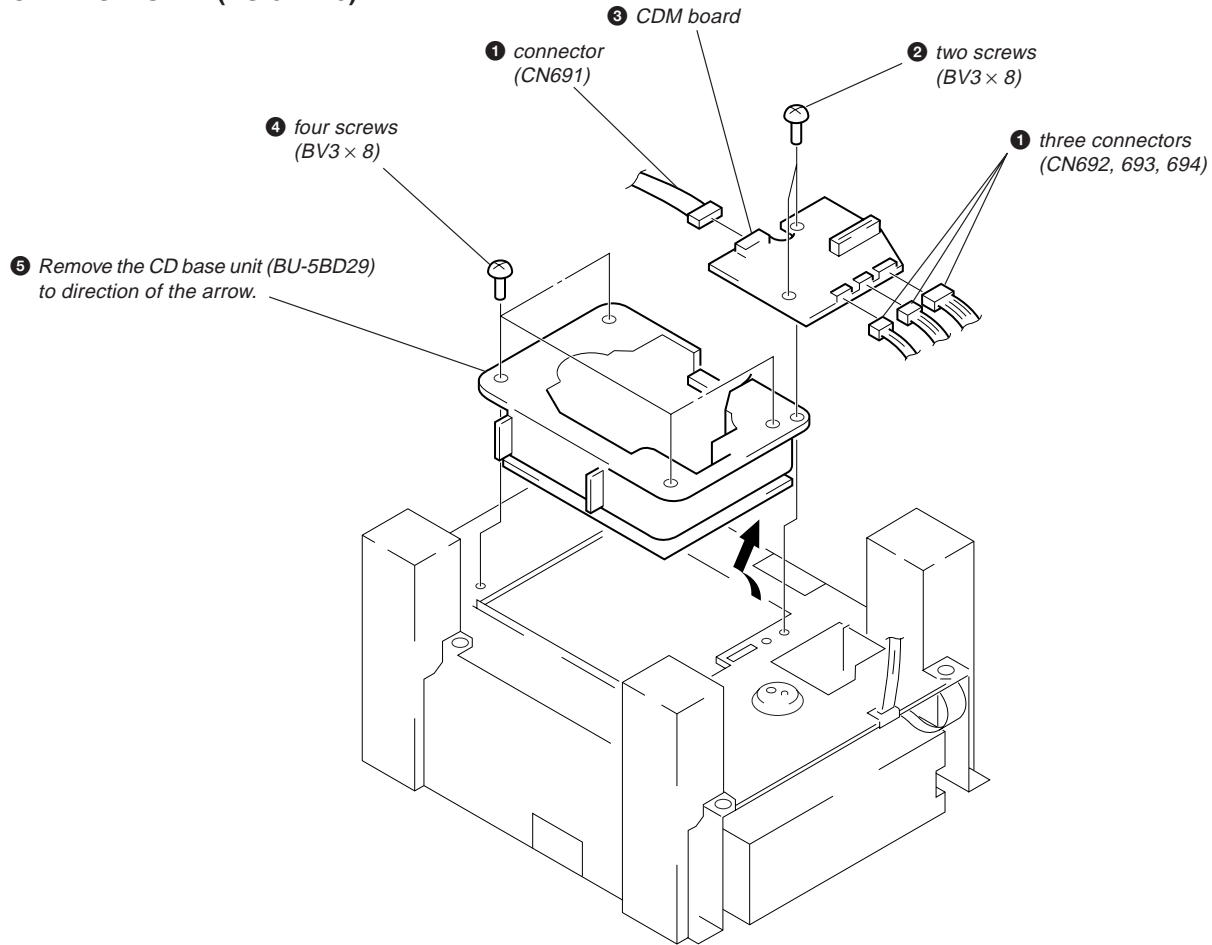
STOCKER ASS'Y



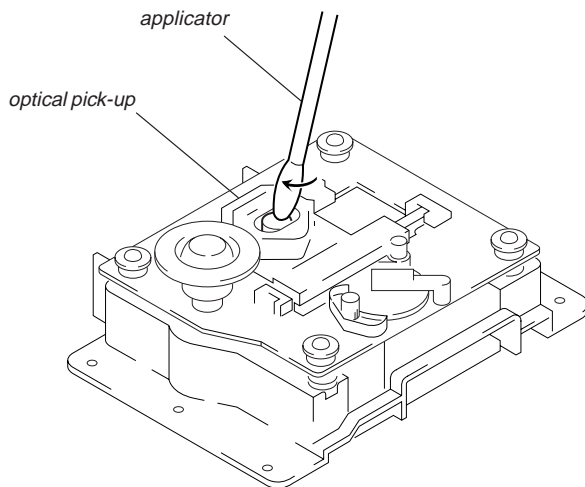
TRAY (SUB) ASS'Y



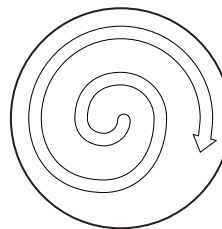
CD BASE UNIT (BU-5BD29)



OPTICAL PICK-UP CLEANING

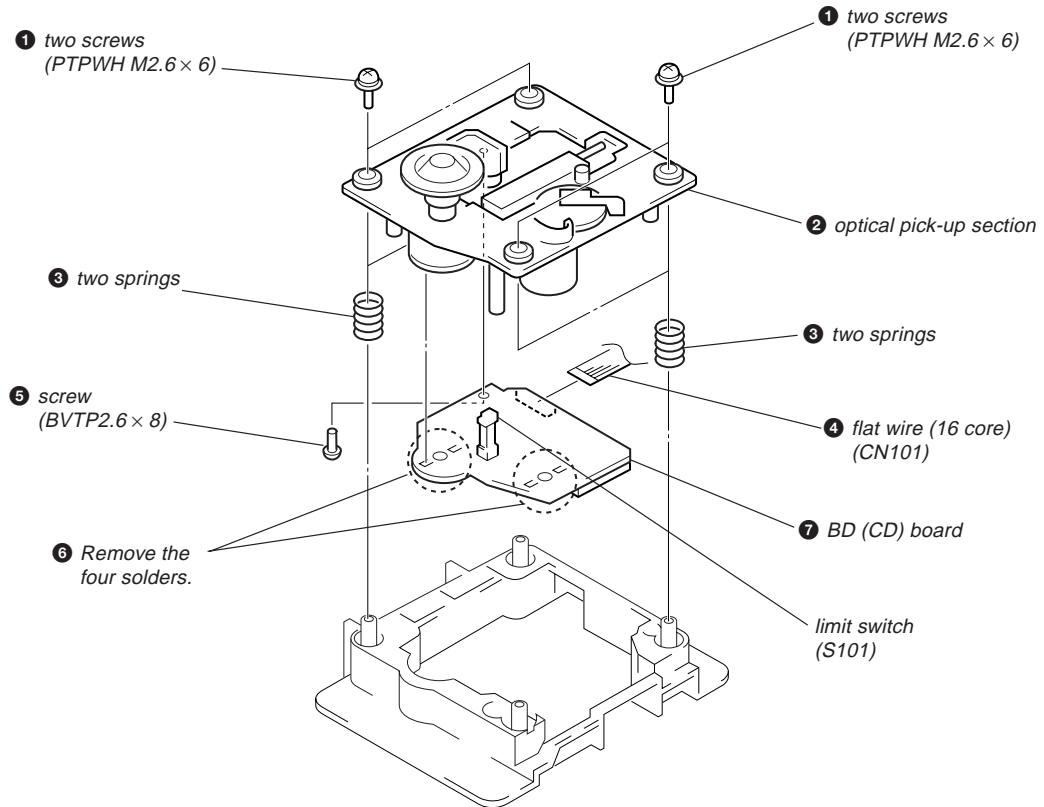


- Note 1:** In cleaning the lens, do not apply an excessive force. As the optical pick-up is vulnerable, application of excessive force could damage the lens holder.
- Note 2:** In cleaning, do not use a cleaner other than exclusive cleaning liquid (KK-91 or isopropyl alcohol).
- Note 3:** Wipe the objective lens spirally from center toward outside. (See Figure A)

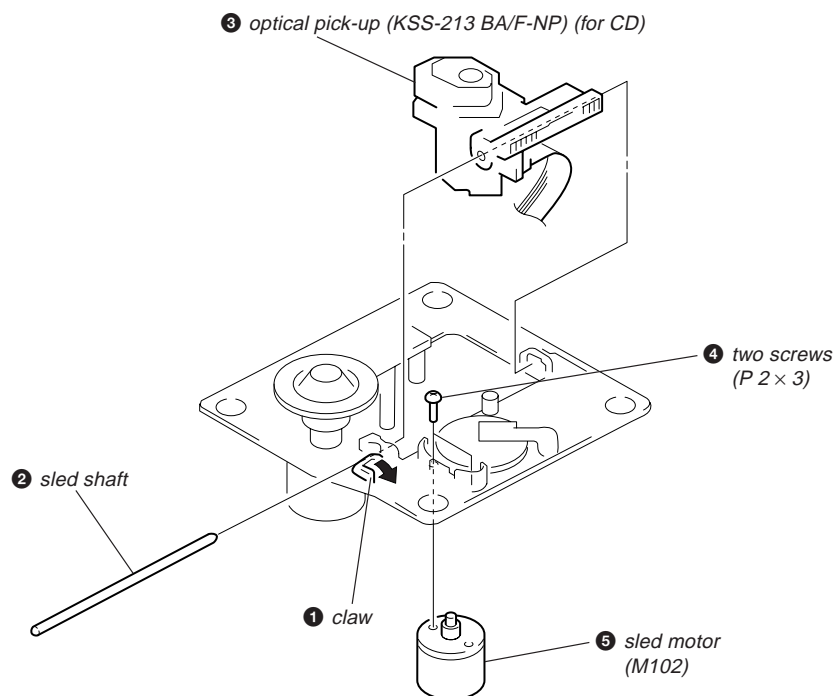


(Figure A)

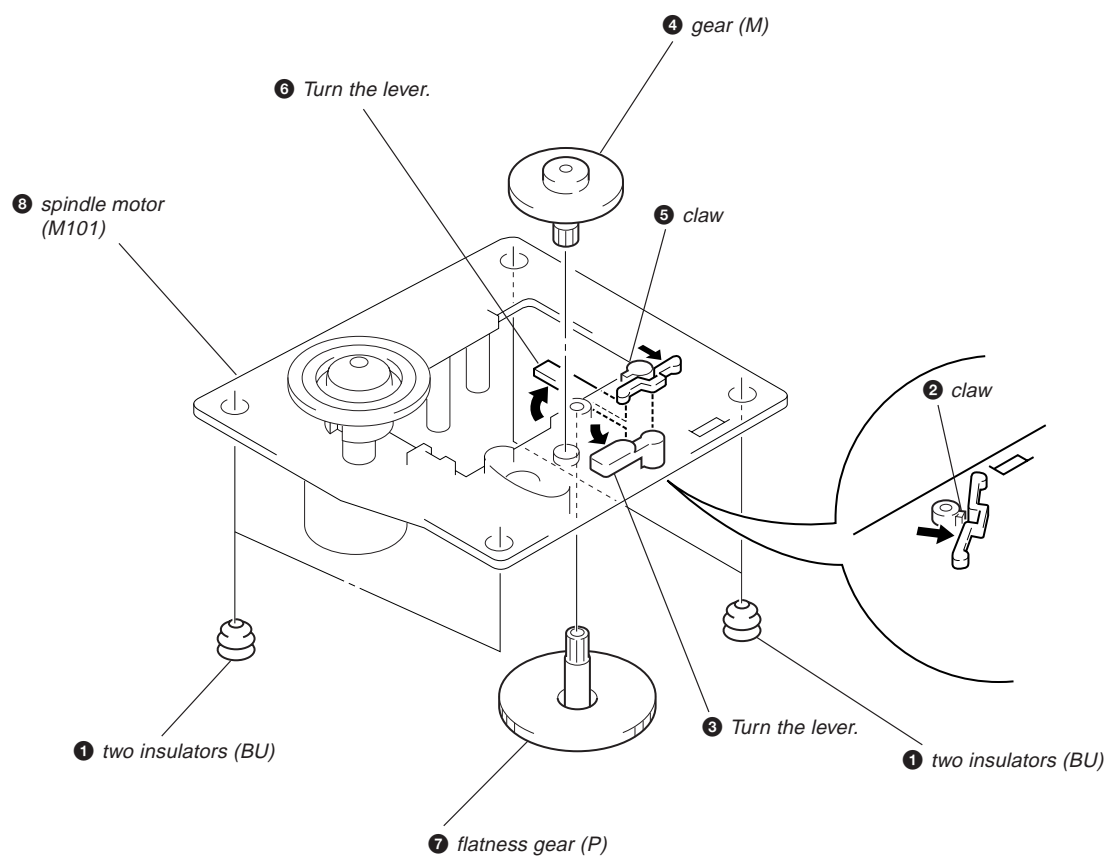
BD (CD) BOARD



OPTICAL PICK-UP (KSS-213BA/F-NP) (for CD), SLED MOTOR (M102)



SPINDLE MOTOR (M101)



SECTION 4 TEST MODE

4-1. PRECAUTIONS FOR USE OF TEST MODE

1. The erasing-protection tab is not detected in the test mode. Therefore, operating in the recording laser emission mode and pressing the **REC/CD-MD SYNC** button, the recorded contents will be erased regardless of the position of the tab. When using a disc that is not to be erased in the test mode, be careful not to enter the continuous recording mode and traverse adjustment mode.
But "CREC MODE", "EF MO CHECK" and "EF MO ADJUST" is detect the erasing-protection tab and recording laser power off.
2. Using MD slot is "DISC 1" only.

4-1-1. Recording Laser Emission Mode and Operating Button

1. Continuous recording mode (CREC MODE)
2. Traverse adjustment mode (EF MO ADJUST)
3. Laser power adjustment mode (LDPWR ADJUST)
4. Laser power check mode (LDPWR CHECK)
5. When pressing the **REC/CD-MD SYNC** button.
6. Traverse checking mode (EF MO CHECK)

4-2. SETTING THE TEST MODE

1. Turn on the set, and select the MD function.
2. Place the MD in "NO DISC" status (No disc present in stocker and inside of set)
3. Press **DBFB** button, **DIMMER** button, and **MD** button simultaneously to activate the Test mode.
When the Test mode is activated. "TEMP ADJUST" is displayed on fluorescent indicator tube.

4-3. LOADING/UNLOADING A DISC IN TEST MODE

1. In the Test mode, use the slot 1 only. (Do not load a disc in other slots.)
2. When a disc is loaded in slot 1, in several seconds it will be automatically pulled in.
3. To unload a disc, press **MD** button .
4. To load a disc again, press **MD** button .
5. In the Test mode, MD1, 2, 3 LEDs do not light regardless of whether a disc is present or not.

4-4. RELEASING THE TEST MODE

Press the **REPEAT** button, and the set returns to normal mode. (If **REPEAT** button is pressed with a disc loaded, the disc is automatically ejected.)

4-5. BASIC OPERATIONS OF THE TEST MODE

All operations are performed using the **MULTI JOG** dial, **ENTER/YES** button, and **EDIT/NO** button. The functions of these buttons and dial are as follows.

Table 1.

Button & dial	Function
MULTI JOG dial	Changes parameters and modes.
ENTER/YES button	Proceeds onto the next step. Finalizes input.
EDIT/NO button	Returns to previous step. Stops operations.

4-6. SELECTING THE TEST MODE

Twenty six test modes are selected by turn the **MULTI JOG** dial.

Table 2.

Display	Contents
TEMP CHECK	Temperature compensation offset check
LDPWR CHECK	Laser power check
EF MO CHECK	Traverse (E-F balance) check
EF CD CHECK	Travers (Pre mastered disk) check
FBIAS CHECK	Focus bias check
CPLAY MODE	Continuous playback mode
CREC MODE	Continuous recording mode
Scurve CHECK	S-curve check (*1)
VERIFY MODE	Non-volatile memory check (*1)
DETRK CHECK	Detrack check
TEMP ADJUST	Temperature compensation offset adjustment
LDPWR ADJUST	Laser power adjustment
EF MO ADJUST	Traverse (E-F balance) adjustment
EF CD ADJUST	Traverse (Pre mastered disk) adjustment
FBIAS ADJUST	Focus bias adjustment
EEP MODE	Non-volatile memory mode (*1)
MANUAL CMD	Manual command transfer mode (*1)
SVDATA READ	Data reading out mode (*1)
ERR DP MODE	Operation of error histories memory
SLED MOVE	Operation of sled motor (*1)
ACCESS MODE	Access check (*1)
0920 CHECK	Outermost periphery check (*1)
WRITE sure?	Non-volatile memory initialize (*1)
HEAD ADJUST	HEAD adjustment check (*1)
CPLAY2MODE	Continuous playback mode (*1)
CREC2MODE	Continuous recording mode (*1)

- For detailed description of each adjustment mode, refer to the "5. ELECTRICAL ADJUSTMENTS" (page 24).
- If a different adjustment mode has been selected by mistake, press the **EDIT/NO** button to exit from it.

*1: Scurve CHECK, VERIFY CHECK, EEP MODE, MANUAL CMD, SVDATA READ, SLED MOVE, ACCESS MODE, 0920 CHECK, Write sure?, HEAD ADJUST, CPLAY2MODE, and CREC2MODE are not used in servicing. If set accidentally, press the **POWER** button immediately to exit it.

4-7. OPERATING THE CONTINUOUS PLAYBACK MODE

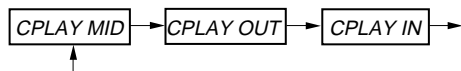
4-7-1. Entering the Continuous Playback Mode

1. Set the disc in the slot 1 of unit. (In several seconds it will be automatically pulled in.) (Whichever recordable discs or discs for playback only are available.)
2. Turn the **MULTI JOG** dial and display "CPLAY MODE".
3. Press the **ENTER/YES** button to change the display to "CPLAY MID".
4. When access completes, the display changes to "C = 0000 AD = 00".

Note: The numbers " " displayed show you error rates and ADER.

4-7-2. Changing the Parts to be Played-back

1. Press the **ENTER/YES** button during continuous playback to change the display as below.



2. When access completes, the display changes to "C1=0000 AD=00".

Note: The numbers " " displayed show you error rates and ADER.

4-7-3. Ending the Continuous Playback Mode

1. Press the **EDIT/NO** button. The display will change to "CPLAY MODE".
2. Press the **MD** button and remove the disc.

Notes:

1. The playback start address for IN, MID, and OUT are as follows.
IN : 40h cluster
MID : 300h cluster
OUT : 700h cluster
In case you want to display the address of the playback position on the display, press the **DISPLAY** button and display "CPLAY (0000)".
2. The **EDIT/NO** button can be used to stop playing anytime.

4-8. OPERATING THE CONTINUOUS RECORDING MODE

4-8-1. Entering the Continuous Recording Mode

1. Set the MO disc in the slot 1 of unit. (Refer to note 3.)
2. Turn the **MULTI JOG** dial and display "CREC MODE".
3. Press the **ENTER/YES** button to change the display to "CREC MID".
4. When access completes, the display changes to "CREC (0000)" and **REC** lights up.

Note: The numbers " " displayed shows you the recording position address.

4-8-2. Changing the Parts to be Recorded

1. When the **ENTER/YES** button is pressed during continuous recording, the display changes as below. ("PROGRAM" indication turns off during change-over of display.)



2. When access completes, the display changes to "CREC (0000)" and **REC** lights up.

Note: The numbers " " displayed shows you the recording position address.

4-8-3. Ending the Continuous Recording Mode

1. Press the **EDIT/NO** button. The display will change to "CREC MODE" and **REC** goes off.
2. Press the **MD** button and remove the disc.

Notes:

1. The recording start address for IN, MID, and OUT are as follows.
IN : 40h cluster
MID : 300h cluster
OUT : 700h cluster
2. The **EDIT/NO** button can be used to stop recording anytime.
3. During the test mode, the erasing-protection tab will not be detected. Therefore be careful not to set the continuous recording mode when a disc not to be erased is set in the unit.
4. Do not perform continuous recording for long periods of time above 5 minutes.
5. During continuous recording, be careful not to apply vibration.

4-9. EEP MODE

This mode reads and writes the contents of the non-volatile memory.

It is not used in servicing. If set accidentally, press the **EDIT/NO** button immediately to exit it.

4-10. FUNCTIONS OF OTHER BUTTONS

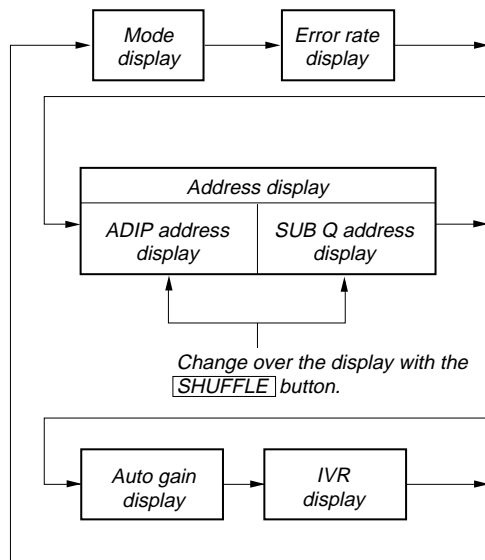
Table 3.

Button	Contents
	Sets continuous playback when pressed in the STOP state. (servo all on) When pressed during continuous playback, the tracking and sled servo turns on/off.
	Stop continuous playback and continuous recording. (servo all off)
	The sled moves to the outer circumference only when this is pressed.
	The sled moves to the inner circumference only when this is pressed.
REC/CD-MD SYNC	Turns recording on/off when pressed during continuous playback.
SHUFFLE	Switches between the pit and groove modes when pressed.
CONTINUE	Switches between the CLV-S (pull-in mode) and CLV-A (playing servo) modes when pressed. (Switches the spindle servo mode.)
DISPLAY	Switches the display when pressed. Returns to previous step. Stop operations.
REPEAT	Releasing the test mode
	Disc eject

Note: The erasing-protection tab is not detected during the test mode.
Recording will start regardless of the position of the erasing-protection tab when the [REC/CD-MD SYNC] button is pressed.

4-11. TEST MODE DISPLAYS

Each time the [DISPLAY] button pressed, the display changes in the following order.



Note: Auto gain display and IVR display are not used in servicing.

1. MODE display
Displays “TEMP ADJUST”, “CPLAY MODE”, etc..
2. Error rate display
Error rates are displayed as follows.
C1= AD=
C1= : Indicates C1 error
AD= : Indicates ADER
3. Address display
Address are displayed as follows.
h= a= (MO groove)
With this display, if [SHUFFLE] button is pressed, the following will be displayed.
h= s= (MO pit and CD)
h=: Header address
a=: ADIP address
s=: SUB Q address
Note: “—” is displayed when the address cannot be read.
4. Auto gain display
Auto gain are displayed as follows.
$$AG = \frac{A}{B} / \frac{C}{D} \left[\frac{E}{F} \right]$$

A= Focus servo gain coefficient
B= Tracking servo gain coefficient
C= [OK] or [NG] or [- -] (not converged)

4-12. MEANINGS OF OTHER DISPLAYS

Table 4.

Display	Contents		
	Light	Off	Blinking
	During continuous playback (servo all on)	Stop state (servo all off)	—
	Recording mode on	Recording mode off	—
ALL DISCS	CLV lock state	CLV unlock state	—
TRACK	Pit mode	Groove mode	—
DISC	High reflection rate disc	Low reflection rate disc	—
REPEAT	Spindle servo CLV-S (pull-in mode)	Spindle servo CLV-A (playing mode)	—
LEVEL-SYNC	ABCD adjustment completed	Not adjustment	—
SHUFFLE	Focus auto gain successful	—	Focus auto gain successful.
PROGRAM	Tracking auto gain successful	—	Tracking auto gain failed.

SECTION 5 ELECTRICAL ADJUSTMENTS

MD SECTION

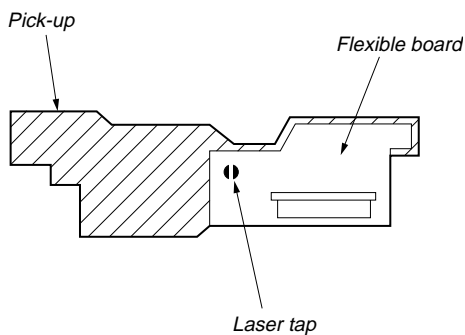
1. PRECAUTIONS FOR CHECKING LASER DIODE EMISSION

To check the emission of the laser diode during adjustments, never view directly from the top as this may lose your eyesight.

2. PRECAUTIONS FOR USE OF OPTICAL PICK-UP (KMS-260A)

As the laser diode in the optical pick-up is easily damaged by static electricity, solder the laser tap of the flexible board when using it.

Before disconnecting the connector, desolder first. Before connecting the connector, be careful not to remove the solder. Also take adequate measures to prevent damage by static electricity. Handle the flexible board with care as it breaks easily.



Optical pick-up flexible board

3. PRECAUTIONS FOR ADJUSTMENTS

- When replacing the following parts, perform the adjustments and checks with ○ in the order shown in the following table.

Table 1.

	Optical Pick-up	BD (MD) board		
		IC171	D101	IC101, IC121, IC192
1. Temperature compensation offset adjustment	×	○	○	○
2. Laser power adjustment	○	○	×	○
3. Traverse adjustment	○	○	×	○
4. Focus bias adjustment	○	○	×	○
5. Error rate check	○	○	×	○

- Set the test mode when performing adjustments. After completing the adjustments, exit the test mode.
- Perform the adjustments in the order shown.
- Use the following tools and measuring devices.
 - Test disc (CD for playback only) TDYS-1 (Parts No. 4-963-646-01)
 - Laser power meter LPM-8001 (Parts No. J-2501-046-A)
 - Oscilloscope (Measure after performing CAL of probe.)
 - Digital voltmeter
 - Thermometer
- When observing several signals on the oscilloscope, etc., make sure that VC and ground do not connect inside the oscilloscope. (VC and ground will become short-circuited)

4. CREATING MO CONTINUOUSLY RECORDED DISC

* This disc is used in focus bias adjustment and error rate check. The following describes how to create a MO continuous recording disc.

- Insert a MO disc (blank disc) commercially available to MD slot 1.
- Turn the **MULTI JOG** dial and display "CREC MODE".
- Press the **ENTER/YES** button and display "CREC MID". "CREC (0300)" is displayed for a moment and recording starts.
- Complete recording within 5 minutes.
- Press the **EDIT/NO** button and stop recording.
- Press the **MD** button and remove the MO disc.

The above has been how to create a continuous recording data for the focus bias adjustment and error rate check.

Note: Be careful not to apply vibration during continuous recording.

5. TEMPERATURE COMPENSATION OFFSET ADJUSTMENT

Save the temperature data at that time in the non-volatile memory as 25°C reference data.

Notes:

1. Usually, do not perform this adjustment.
2. Perform this adjustment in an ambient temperature of 22 °C to 28 °C. Perform it immediately after the power is turned on when the internal temperature of the unit is the same as the ambient temperature of 22 °C to 28 °C.
3. When D101 has been replaced, perform this adjustment after the temperature of this part has become the ambient temperature.

Adjusting Method:

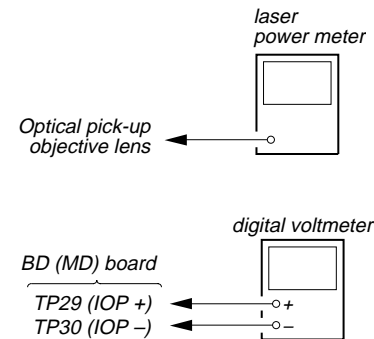
1. Turn the **[MULTI JOG]** dial and display “TEMP ADJUST”.
 2. Press the **[ENTER/YES]** button and select the “TEMP ADJUST” mode.
 3. “TEMP = **[]**” and the current temperature a data will be displayed.
 4. To save the data, press the **[ENTER/YES]** button.
When not saving the data, press the **[EDIT/NO]** button.
 5. When the **[ENTER/YES]** button is pressed, “TEMP= **[]** SAVE” will be displayed for some time, followed by “TEMP ADJUST”.
- When the **[EDIT/NO]** button is pressed, “TEMP ADJUST” will be displayed immediately.

Specifications:

The temperature should be within “E0-EF”, “F0-FF”, “00-0F”, “10-1F” and “20-2F”.

6. LASER POWER ADJUSTMENT

Connection:



Adjusting Method:

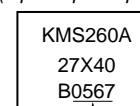
1. Set the laser power meter on the objective lens of the optical pick-up. (When it cannot be set properly, press the **[▶▶]** button or **[◀◀]** button and move the optical pick-up.)
Connect the digital voltmeter to CN110 pin ⑤ (I+3 V) and CN110 pin ④ (IOP) of the BD (MD) board.
 2. Turn the **[MULTI JOG]** dial and display “LDPWR ADJUST”.
(Laser power: for adjustment)
 3. Press the **[ENTER/YES]** button and display “LD 0.9 mW \$ **[]**”.
 4. Turn the **[MULTI JOG]** dial so that the reading of the laser power meter becomes 0.82 to 0.93 mW.
Set the range control on the laser power meter to 10 mW, then press the **[ENTER/YES]** button to save the adjustment result in the non-volatile memory.
 (“LD SAVE \$ **[]**” will be displayed for a moment.)
 5. Then “LD 7.0 mW \$ **[]**” will be displayed.
 6. Turn the **[MULTI JOG]** dial so that the reading of the laser power meter becomes 6.9 to 7.1 mW, press the **[ENTER/YES]** button and save the adjustment result in the nonvolatile memory.
 (“LD SAVE \$ **[]**” will be displayed for a moment.)
- Note:** Do not perform the emission with 7.0 mW more than 15 seconds continuously.
7. Turn the **[MULTI JOG]** dial and display “LDPWR CHECK”.
 8. Press the **[ENTER/YES]** button and display “LD 0.9 mW \$ **[]**”.
Check that the reading of the laser power meter becomes 0.80 to 0.96 mW.
 9. Press the **[ENTER/YES]** button and display “LD 7.0 mW \$ **[]**”.
Check that the reading of the laser power meter and digital voltmeter satisfy the specified value.

Specification:

Laser power meter reading : 7.0 ± 0.2 mW

Digital voltmeter reading : Optical pick-up displayed value $\pm 10\%$

(Optical pick-up label)



IOP=56.7 mA in this case

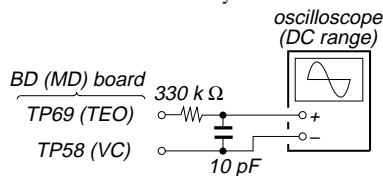
$IOP (mA) = \text{Digital voltmeter reading (mV)} / 1 (\Omega)$

10. Press the **[EDIT/NO]** button and display “LDPWR CHECK”, and stop the laser emission.
(The **[EDIT/NO]** button is effective at all times to stop the laser emission.)

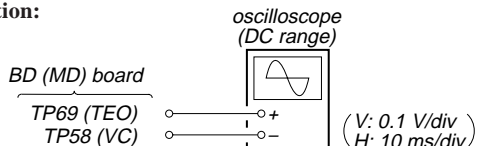
7. TRAVERSE (E-F BALANCE) ADJUSTMENT

Note 1: Data will be erased during MO reading if a recorded disc is used in this adjustment.

Note 2: If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



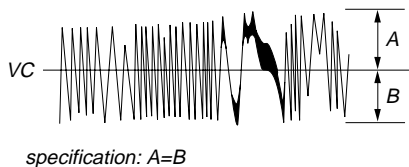
Connection:



Adjusting Method:

1. Connect an oscilloscope to TP69 (TEO) and TP58 (VC) of the BD (MD) board.
2. Load a MO disc (any available on the market) to MD slot 1. (Refer to note 1.)
3. Press the **▶▶** button and move the optical pick-up outside the pit.
4. Turn the **MULTI JOG** dial and display "EFBAL ADJUST".
5. Press the **ENTER/YES** button and display "EFB= MO-R".
(Laser power READ power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)
6. Turn the **MULTI JOG** dial so that the waveforms of the oscilloscope becomes the specified value. (When the **MULTI JOG** dial is turned, the "" of "EFB= MO-R" changes and the waveform changes.)
In this adjustment, waveform varies at intervals of approx. 2%.
Adjust the waveform so that the specified value is satisfied as much as possible.
(MO read power traverse adjustment)

(Traverse Waveform)



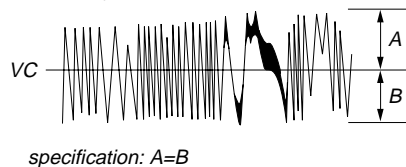
7. Press the **ENTER/YES** button, and save the result of adjustment to the non-volatile memory.
(“EFB= SAVE” will be displayed for a moment. Then “EFB= MO-W” will be displayed.)

8. Turn the **MULTI JOG** dial so that the waveforms of the oscilloscope becomes the specified value. (When the **MULTI JOG** dial is turned, the "" of "EFB= MO-W" changes and the waveform changes.)

In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

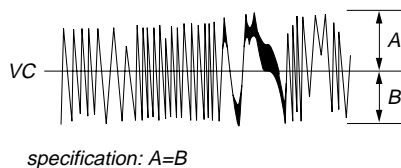
(MO write power traverse adjustment)

(Traverse Waveform)



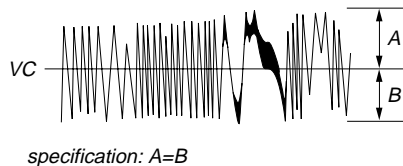
9. Press the **ENTER/YES** button, and save the result of adjustment to the non-volatile memory.
(“EFB= SAVE” will be displayed for a moment. Then “EFB= MO-P” will be displayed.)
10. The optical pick-up moves to the pit area automatically and servo is imposed.
11. Turn the **MULTI JOG** dial until the waveforms of the oscilloscope moves closer to the specified value.
In this adjustment, waveform varies at intervals of approx. 2%.
Adjust the waveform so that the specified value is satisfied as much as possible.

(Traverse Waveform)



12. Press the **ENTER/YES** button, and save the result of adjustment to the non-volatile memory.
(“EFB= SAVE” will be displayed for a moment. Then “EF MO ADJUST” will be displayed.)
The disc stops rotating automatically.
13. Press the **MD▲** button and remove the MO disc.
14. Set the test mode again and load the test disc TDYS-1 to MD slot 1.
15. Turn the **MULTI JOG** dial and display “EF CD ADJUST”
16. Press the **ENTER/YES** button and display “EFB= CD”.
Servo is imposed automatically.
17. Turn the **MULTI JOG** dial until the waveforms of the oscilloscope moves closer to the specified value.
In this adjustment, waveform varies at intervals of approx. 2%.
Adjust the waveform so that the specified value is satisfied as much as possible.

(Traverse Waveform)



18. Press the **ENTER/YES** button, and save the result of adjustment to the non-volatile memory.
(“EFB= SAVE” will be displayed for a moment. Then “EF CD ADJUST” will be displayed.)
19. Press the **MD▲** button and remove the test disc TDYS-1.

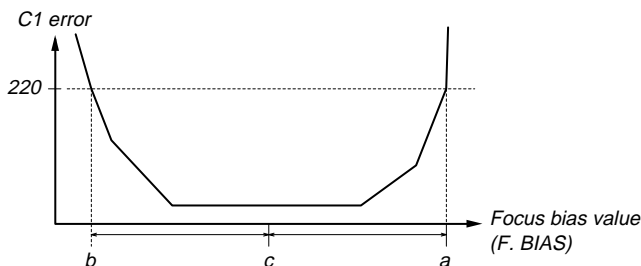
8. FOCUS BIAS ADJUSTMENT

Adjusting Method:

1. Load a continuously recorded disc (Refer to “4. Creating MO Continuously Recorded Disc”).
2. Turn the **[MULTI JOG]** dial and display “CPLAY MODE”.
3. Press the **[ENTER/YES]** button and display “CPLAY MID”.
4. Press the **[EDIT/NO]** button when “C1= [] [] [] [] AD= [] []” is displayed.
5. Turn the **[MULTI JOG]** dial and display “FBIAS ADJUST”.
6. Press the **[ENTER/YES]** button and display “[] [] [] [] / [] [] a= [] []”. The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [a=] indicate the focus bias value.
7. Turn right the **[MULTI JOG]** dial and find the focus bias value at which the C1 error rate becomes 220. (Refer to note 2.)
8. Press the **[ENTER/YES]** button and display “[] [] [] [] / [] [] b= [] []”.
9. Turn left the **[MULTI JOG]** dial and find the focus bias value at which the C1 error rate becomes 220. (Refer to note 2.)
10. Press the **[ENTER/YES]** button and display “[] [] [] [] / [] [] c= [] []”.
11. Check that the C1 error rate is below 50 and ADER is 00. Then press the **[ENTER/YES]** button.
12. If the “(00)” in “[] [] [] [] / [] [] (00)” is above 20, press the **[ENTER/YES]** button.
If below 20, press the **[EDIT/NO]** button and repeat the adjustment from step 2 again.
13. Press the **[EDIT/NO]** button and press the **[MD▲]** button to remove the continuously recorded disc.

Note 1: The relation between the C1 error and focus bias is as shown in the following figure. Find points a and b in the following figure using the above adjustment. The focal point position c is automatically calculated from points a and b.

Note 2: As the C1 error rate changes, perform the adjustment using the average value.



9. ERROR RATE CHECK

9-1. CD Error Rate Check

Checking Method:

1. Load a test disc TDYS-1.
2. Turn the **[MULTI JOG]** dial and display “CPLAY MODE”.
3. Press the **[ENTER/YES]** button and display “CPLAY MID”.
4. “C1= [] [] [] [] AD= [] []” is displayed.
5. Check that the C1 error is below 20.
6. Press the **[EDIT/NO]** button, stop playback, press the **[MD▲]** button, and remove the test disc.

9-2. MO Error Rate Check

Checking Method:

1. Load a continuously recorded disc (Refer to “5-4. Creating MO Continuously Recorded Disc”).
2. Turn the **[MULTI JOG]** dial and display “CPLAY MODE”.
3. Press the **[ENTER/YES]** button and display “CPLAY MID”.
4. “C1= [] [] [] [] AD= [] []” is displayed.
5. If the C1 error is below 50, check that ADER is 00.
6. Press the **[EDIT/NO]** button, stop playback, press the **[MD▲]** button, and remove the continuously recorded disc.

10. FOCUS BIAS CHECK

Change the focus bias and check the focus tolerance amount.

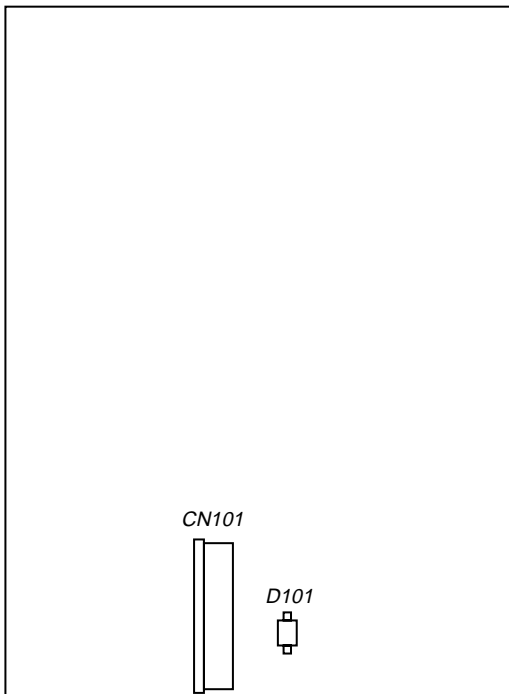
Checking Method:

1. Load a continuously recorded disc (Refer to “5-4. Creating MO Continuously Recorded Disc”).
2. Turn the **[MULTI JOG]** dial and display “CPLAY MODE”.
3. Press the **[ENTER/YES]** button and display “CPLAY MID”.
4. Press the **[EDIT/NO]** button when “C1= [] [] [] [] AD= [] []” is displayed.
5. Turn the **[MULTI JOG]** dial and display “FBIAS CHECK”.
6. Press the **[ENTER/YES]** button and display “[] [] [] [] / [] [] c= [] []”. The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [c=] indicate the focus bias value.
Check that the C1 error is below 50 and ADER is 00.
7. Press the **[ENTER/YES]** button and display “[] [] [] [] / [] [] b= [] []”. Check that the C1 error is not below 100 and ADER is not above 02 every time.
8. Press the **[ENTER/YES]** button and display “[] [] [] [] / [] [] a= [] []”. Check that the C1 error is not below 100 and ADER is not above 02 every time.
9. Press the **[EDIT/NO]** button, next press the **[MD▲]** button, and remove the continuously recorded disc.

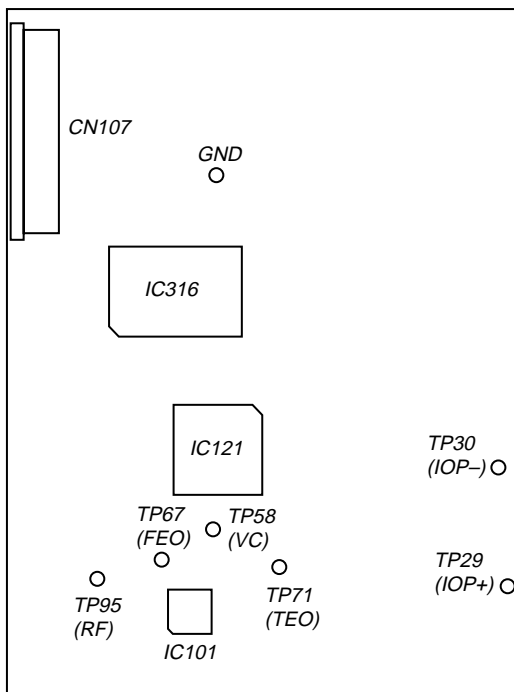
Note 1: If the C1 error and ADER are above 00 at points a or b, the focus bias adjustment may not have been carried out properly. Adjust perform the beginning again.

11. ADJUSTING POINTS AND CONNECTING POINTS

[BD (MD) BOARD] – SIDE A –



[BD (MD) BOARD] – SIDE B –



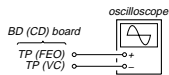
CD SECTION

Notes:

1. CD Block basically constructed to operated without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (Part No.: 3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10 MΩ impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

1. S-Curve CHECK

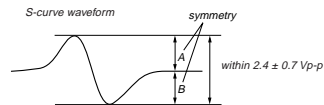
Connection:



Procedure:

1. Connect the oscilloscope to TP (FEO) and TP (VC) on BD (CD) board.
2. Connect the TP (FOK) and TP (GND) with lead wire.
3. Turned power switch on.
4. Put disc (YEDS-18) in and turned power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)

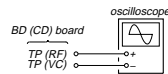
5. Confirm that the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 2.4 ± 0.7 Vp-p.



6. After check, remove the lead wire connected in step 2.
Note: • Try to measure several times to make sure that the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

2. RF LEVEL CHECK

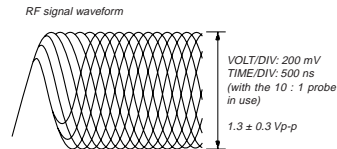
Connection:



Procedure:

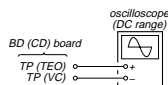
1. Connect the oscilloscope to TP (RF) and TP (VC) on BD (CD) board.
2. Turned power switch on. (stop mode)
3. Put disc (YEDS-18) in and press the [▶] button.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note: Clear RF signal waveform means that the shape "◇" can be clearly distinguished at the center of the waveform.



3. E-F BALANCE (TRAVERSE) CHECK

Connection:

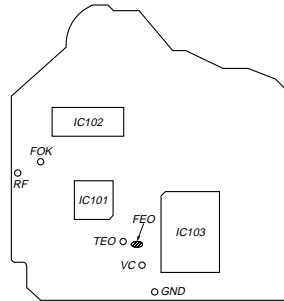


Procedure:

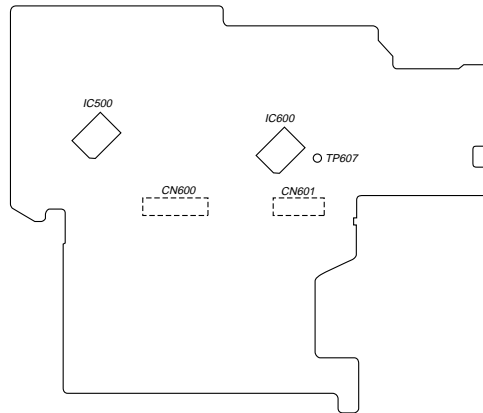
1. Connect the lead wire to TP607. (on the SUB board)
2. Connect the oscilloscope to TP (TEO) and TP (VC) on BD (CD) board.
3. Turned power switch on.
4. Select the CD function.
5. Connect the lead wire to ground (from TP607)
6. Put disc (YEDS-18) in and press the [▶] button.
7. Press the [DISPLAY] button. (Tracking servo and sled servo are turned off.)
8. Confirm that the oscilloscope waveform is symmetrical on the top and bottom in relation to 0 Vdc, and check this level.
9. Release the lead wire.

4. CONNECTING POINTS

[BD (CD) BOARD] – Side B –

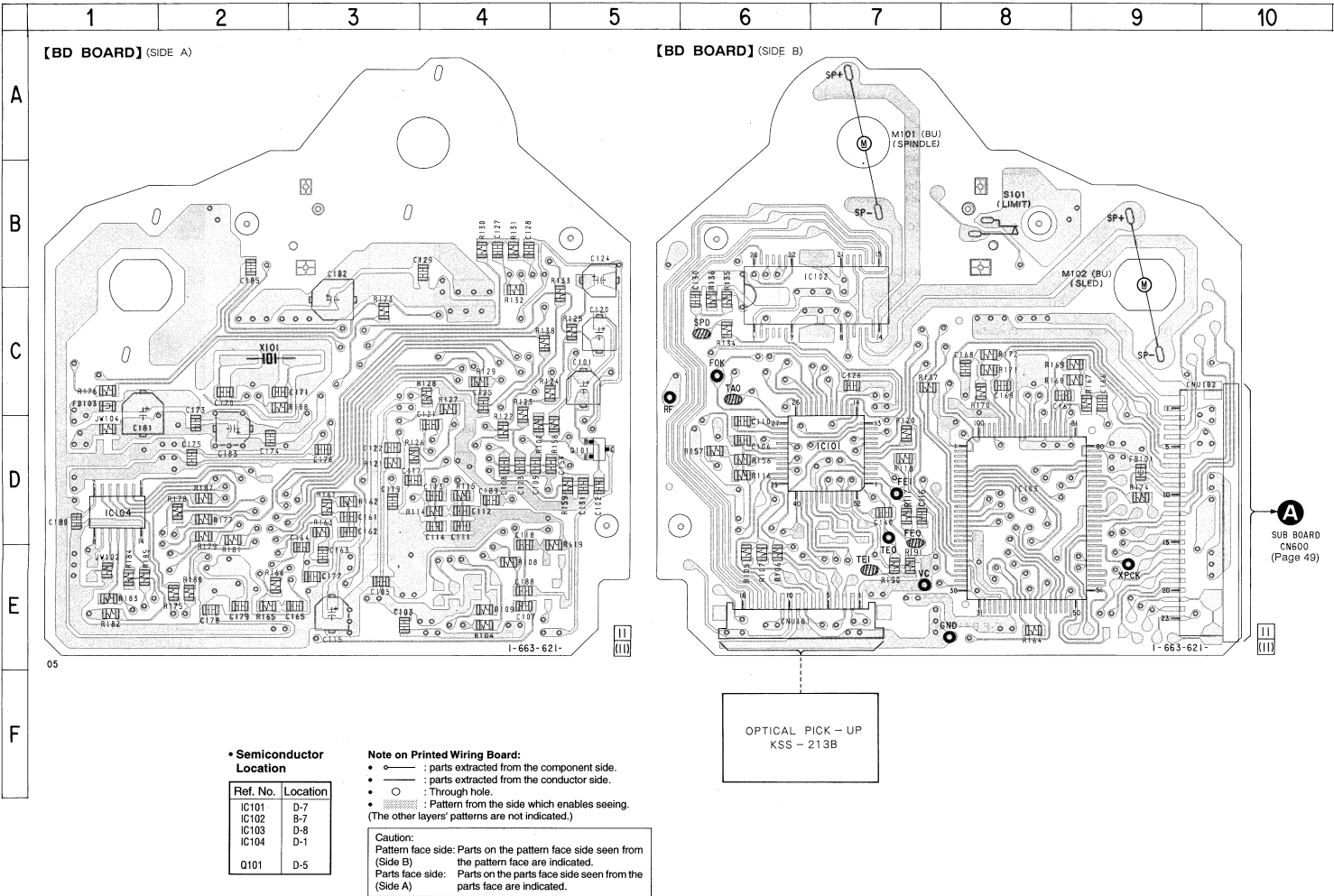


[SUB BOARD] – Conductor Side –

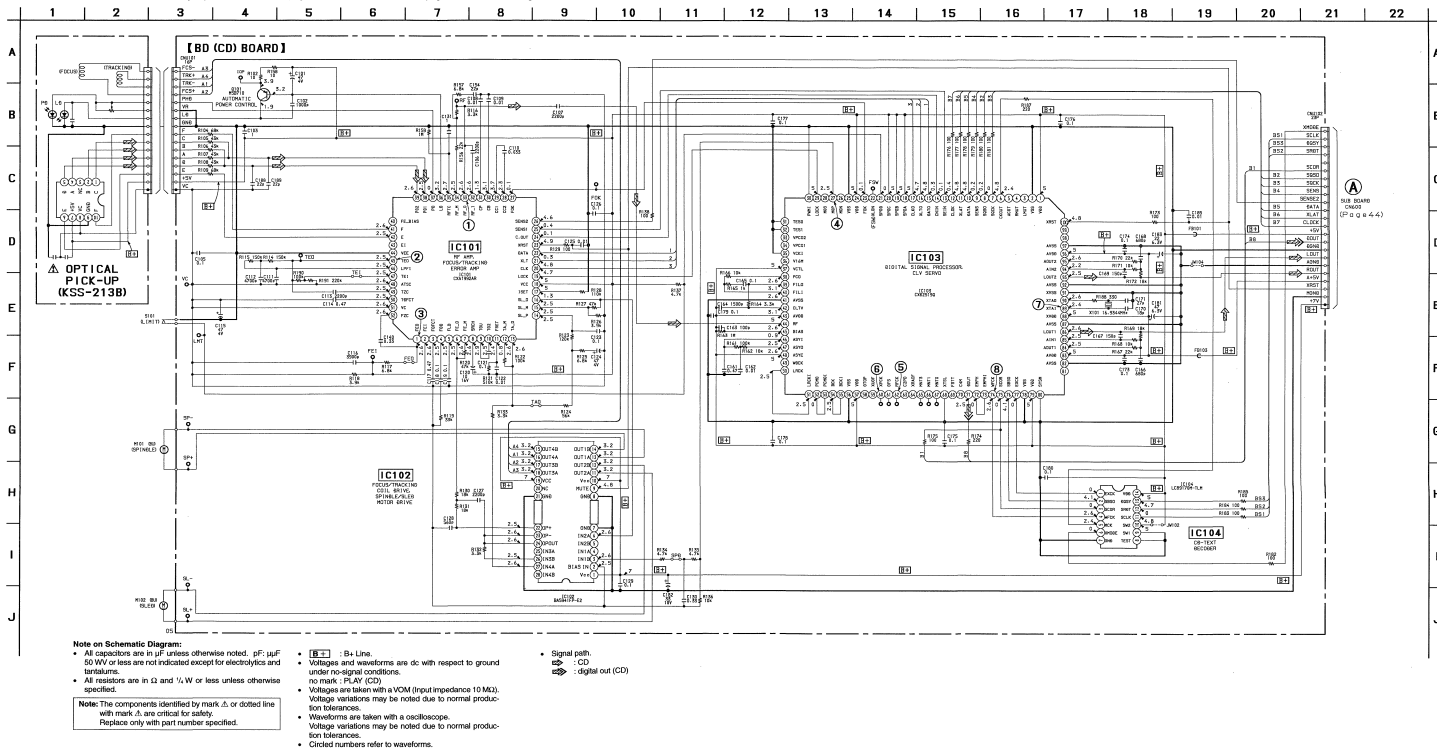


SECTION 6
DIAGRAMS

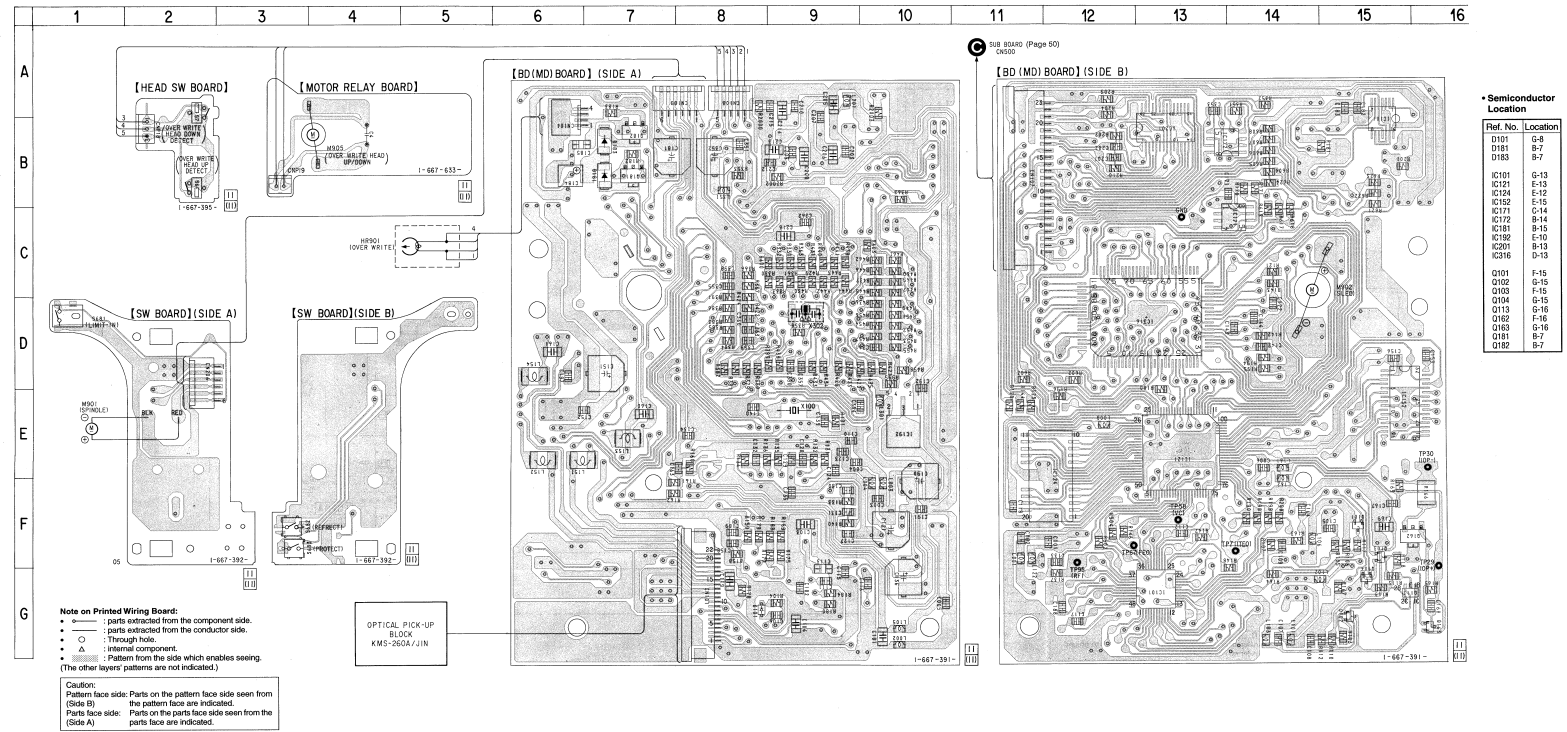
6-1. PRINTED WIRING BOARD – BD (CD) Section – • See page 106 for Circuit Boards Location.

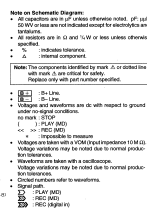


6-2. SCHEMATIC DIAGRAM – BD (CD) Section – • See page 83 for Waveforms, and see page 86 for IC Block Diagrams.



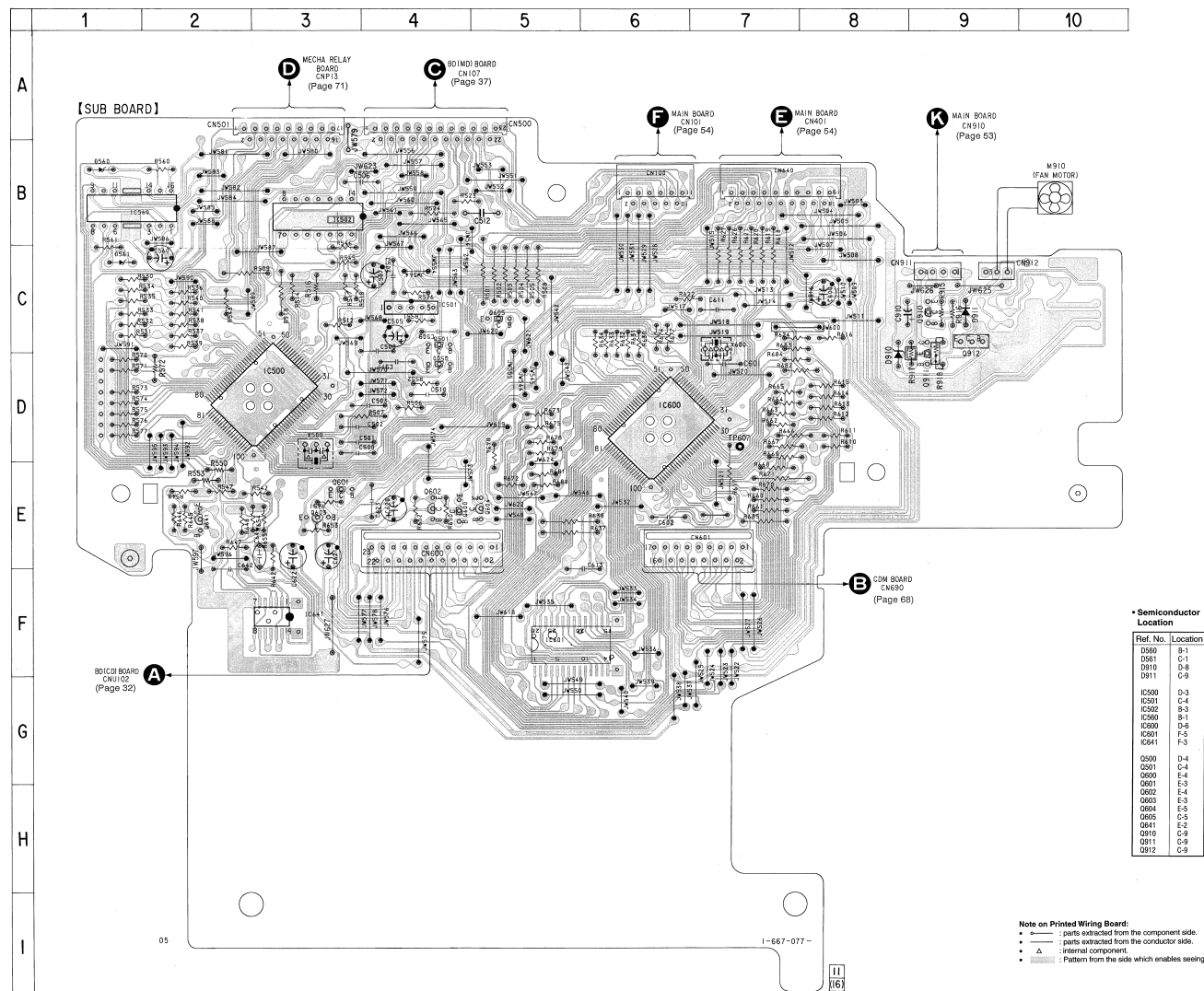
6-3. PRINTED WIRING BOARDS – BD (MD) Section – • See page 106 for Circuit Boards Location.



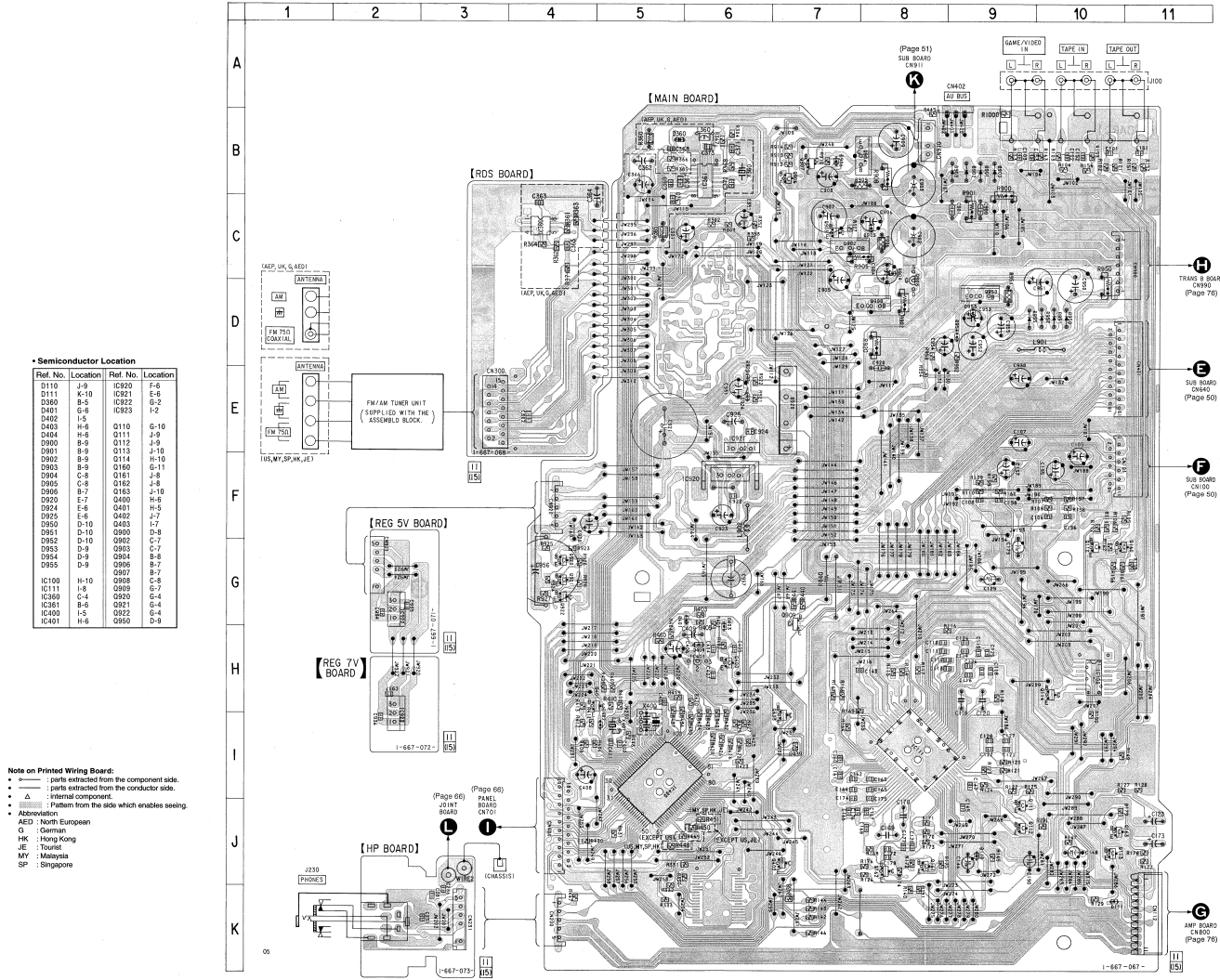




6-6. PRINTED WIRING BOARD - SUB Section - • See page 106 for Circuit Boards Location.

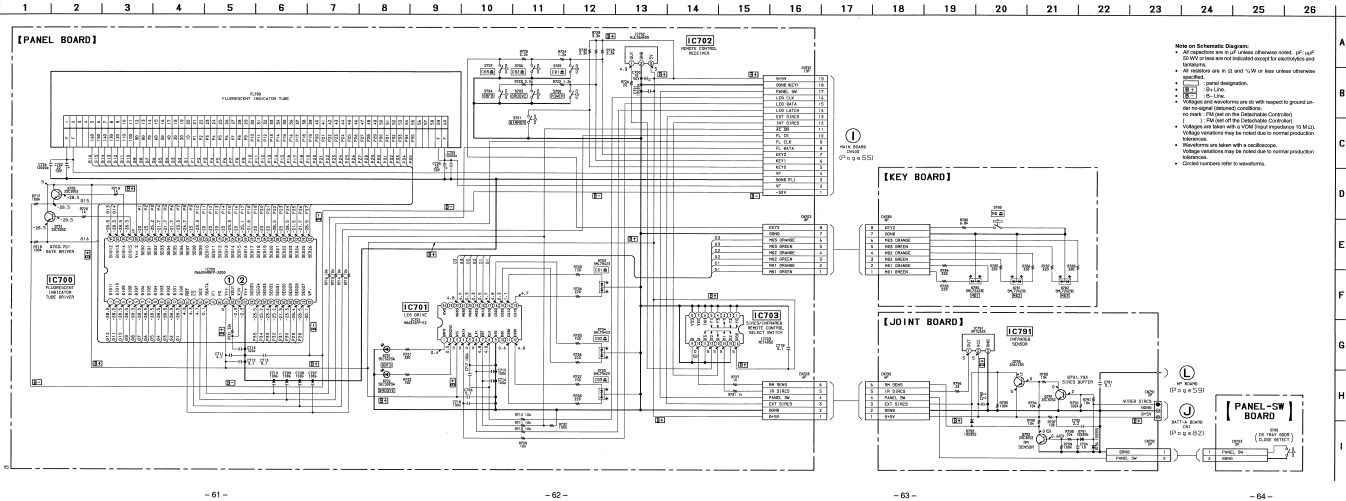


6-7. PRINTED WIRING BOARDS – MAIN Section – • See page 106 for Circuit Boards Location.

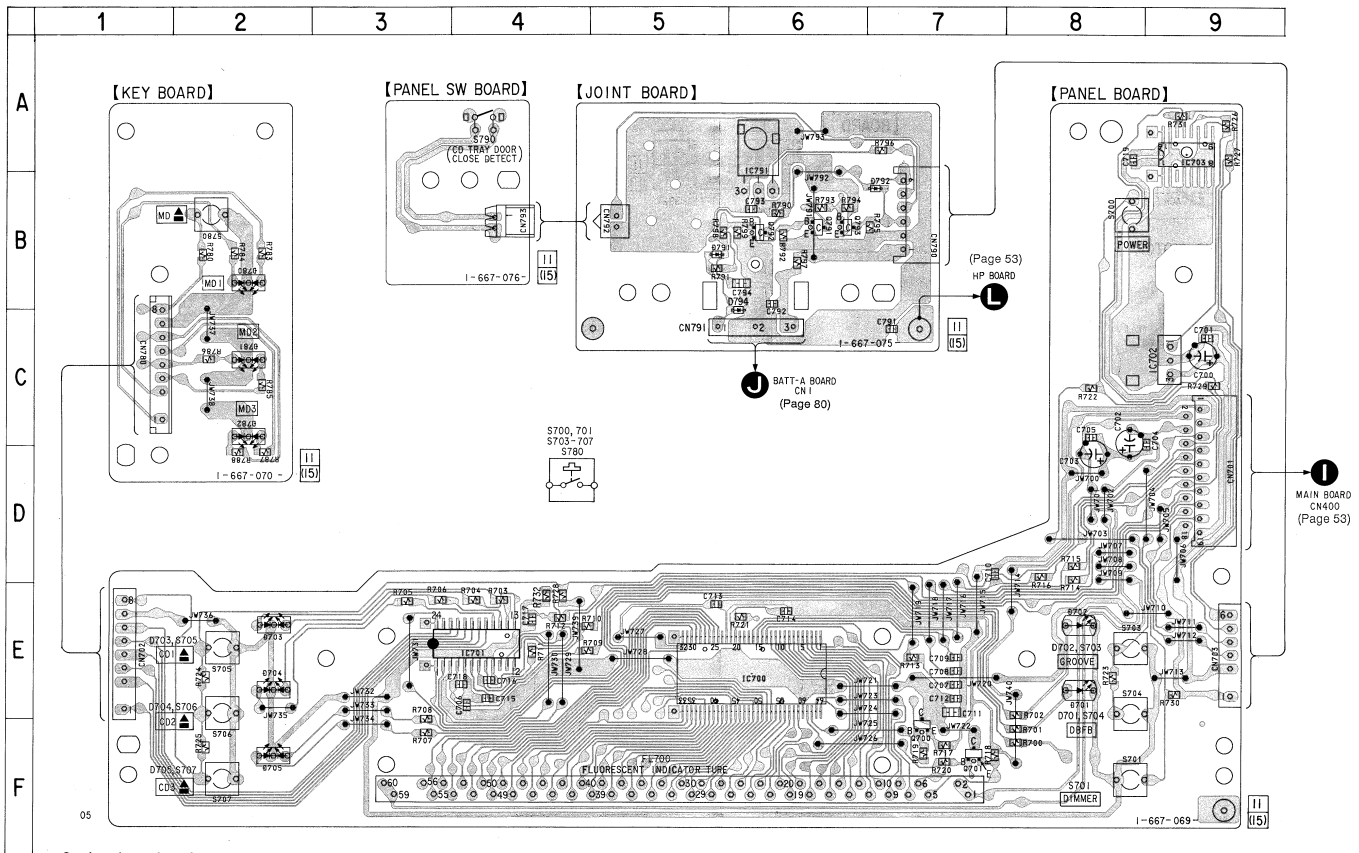




5-9. SCHEMATIC DIAGRAM - PANEL Section - • See page 60 for Waveform, see page 61 for IC Block Diagrams.



6-10. PRINTED WIRING BOARDS – PANEL Section – • See page 106 for Circuit Boards Location.



• Semiconductor Location

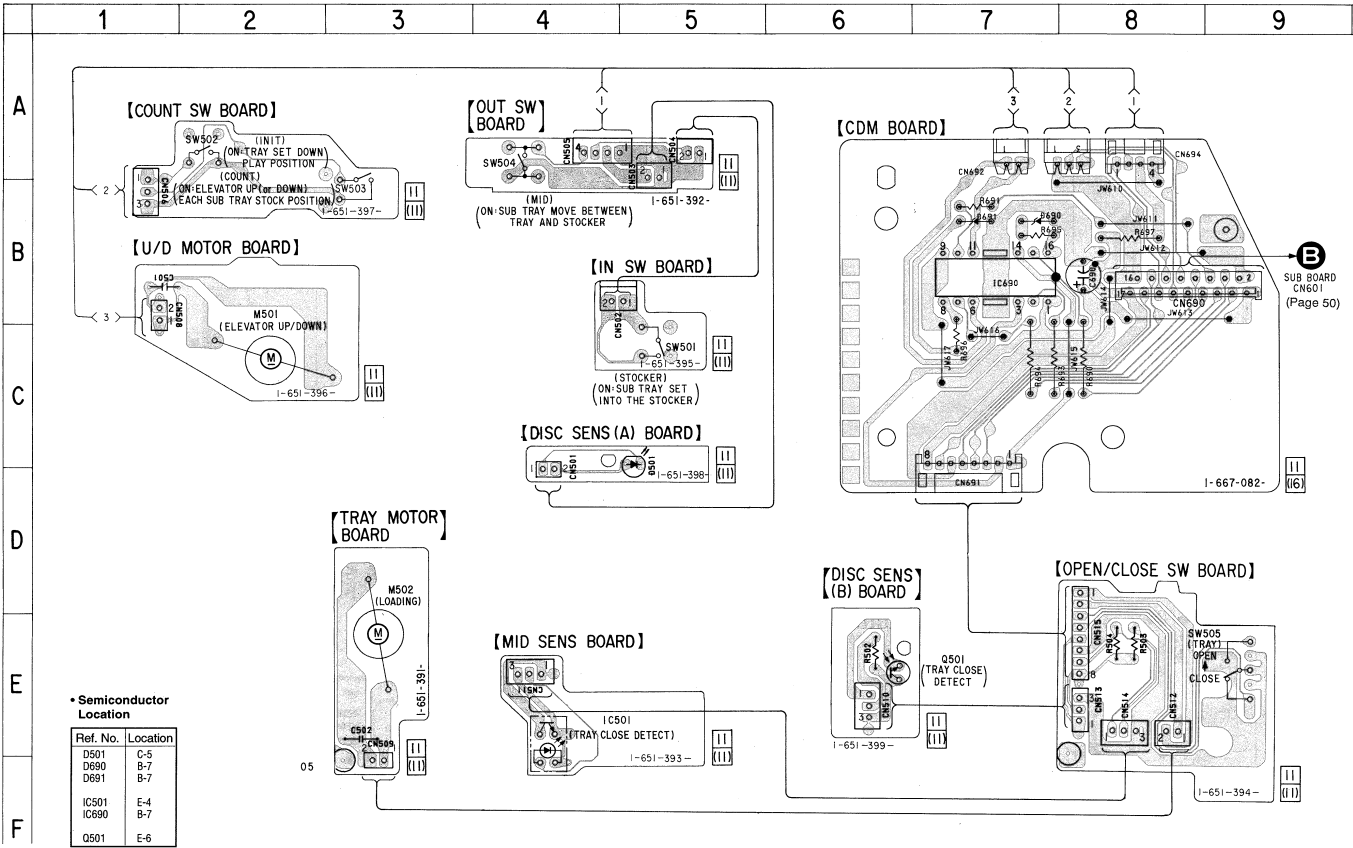
Ref. No.	Location	Ref. No.	Location
D701	E-8	IC700	E-6
D702	E-8	IC701	E-4
D703	E-2	IC702	C-9
D704	E-2	IC703	A-9
D705	F-2	IC791	B-6
D780	B-2		
D781	C-2	Q700	F-7
D782	C-2	Q701	F-7
D791	B-5	Q791	B-6
D792	B-7	Q792	B-6
D794	C-6	Q793	B-6

Note on Printed Wiring Board:

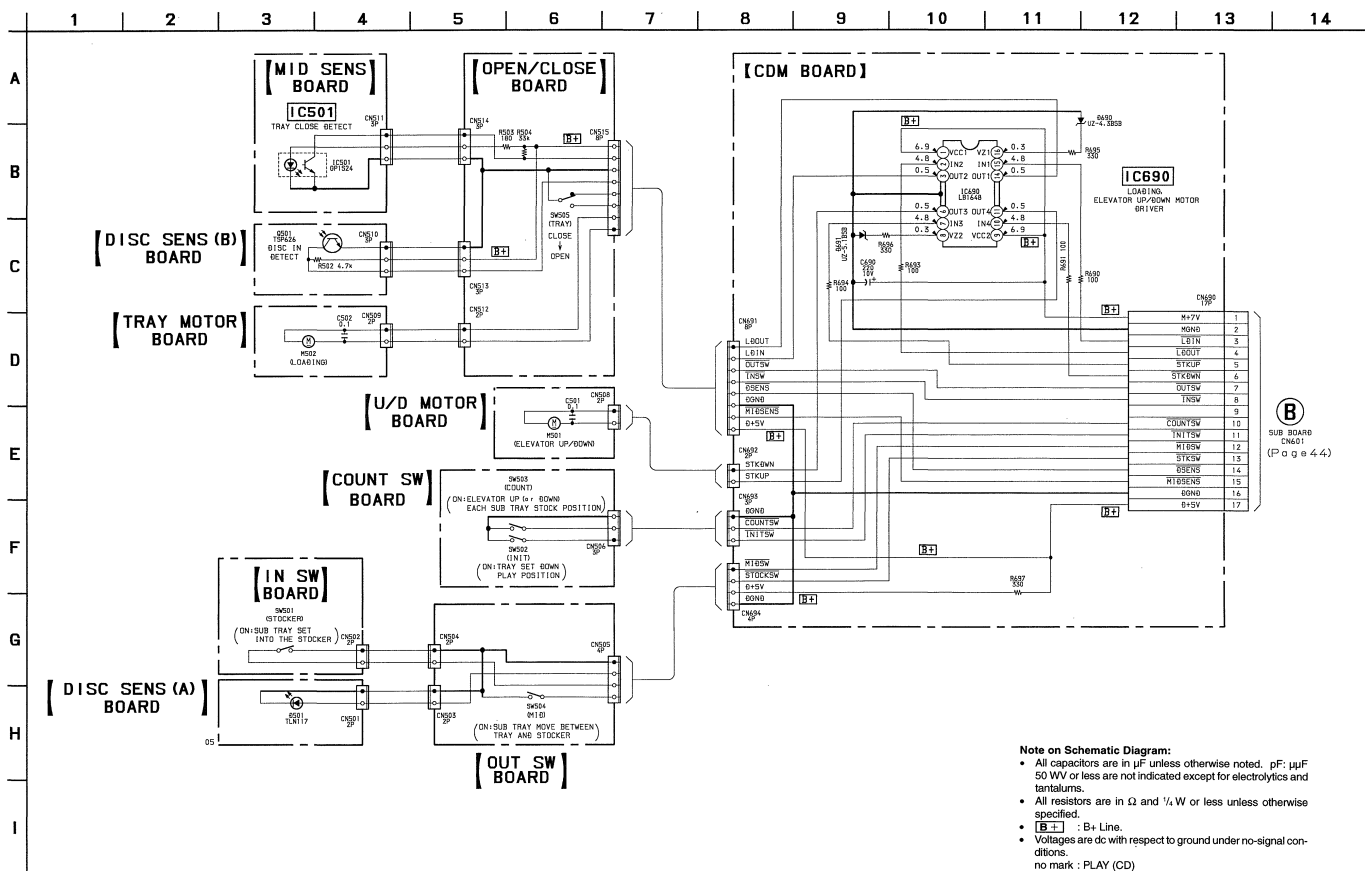
- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : Pattern from the side which enables seeing.

HCD-MD515

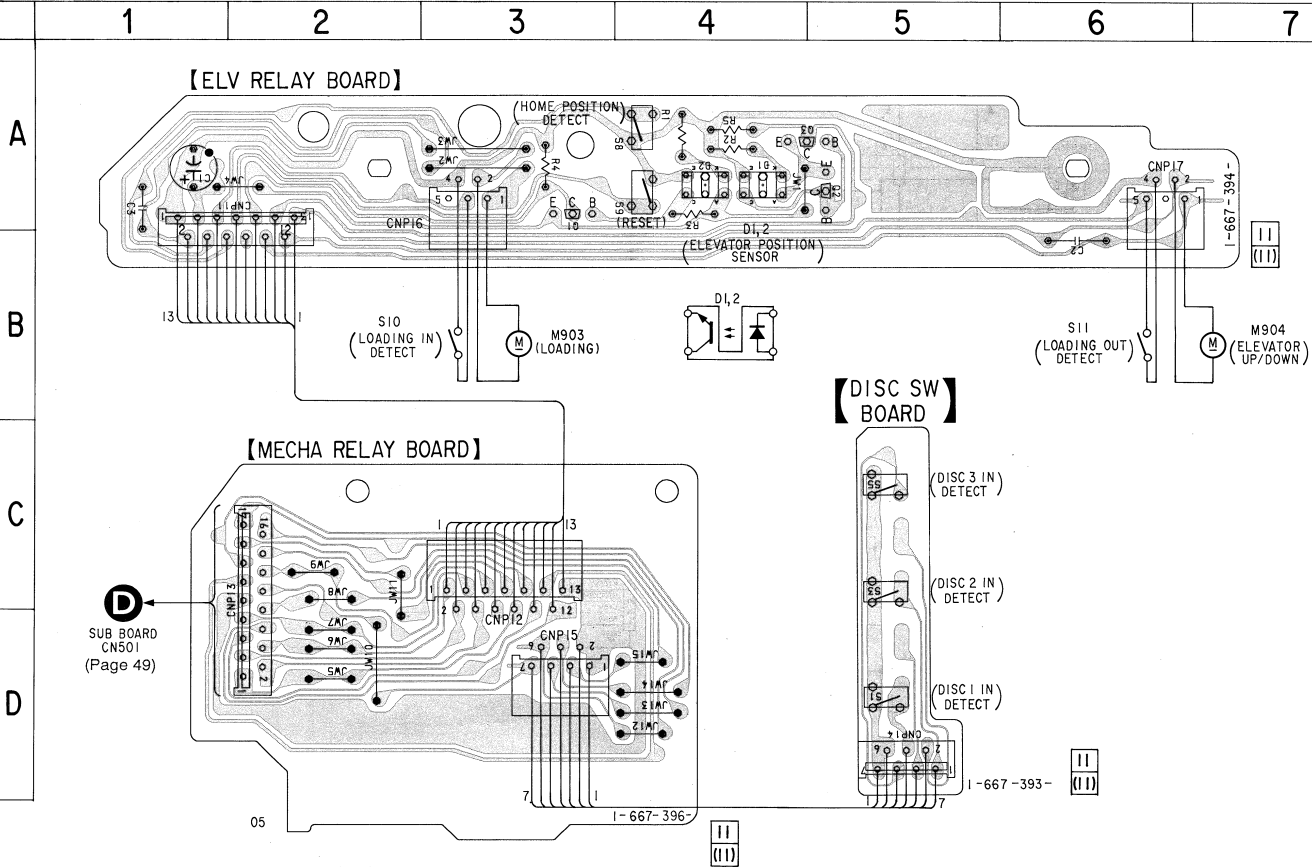
6-11. PRINTED WIRING BOARDS – CD (Motor/Sensor) Section – • See page 106 for Circuit Boards Location.



6-12. SCHEMATIC DIAGRAM – CD (Motor/Sensor) Section – • See page 89 for IC Block Diagram.



6-13. PRINTED WIRING BOARDS – MD (Motor/Sensor) Section – • See page 106 for Circuit Boards Location.



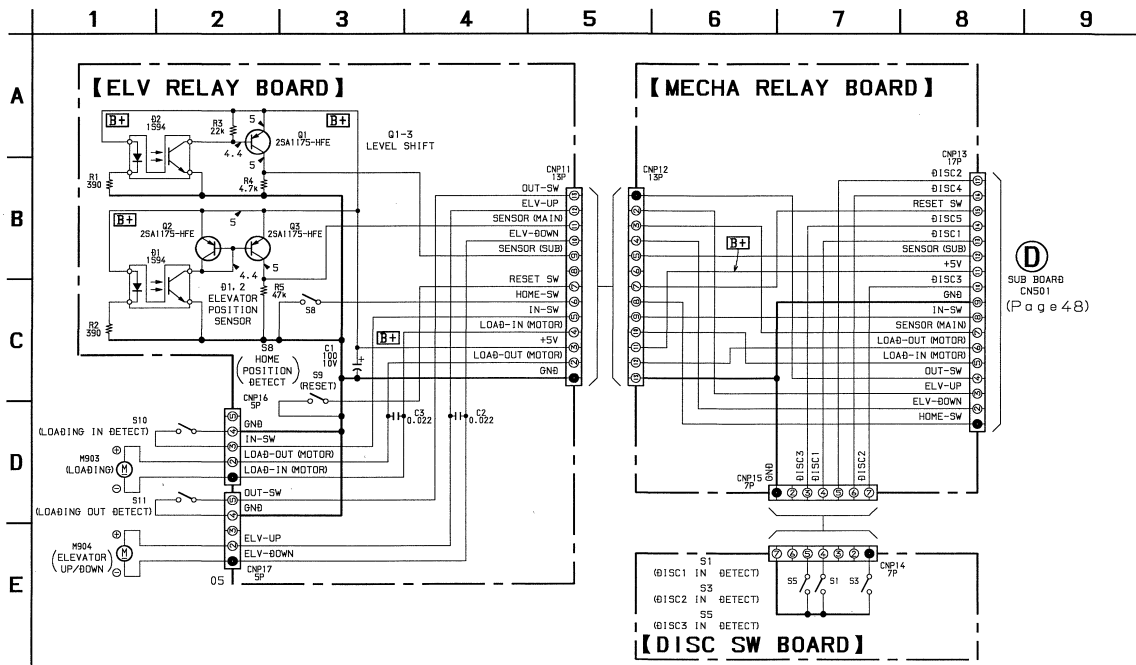
Note on Printed Wiring Board:

- : parts extracted from the component side.
- : Pattern from the side which enables seeing.

• Semiconductor Location

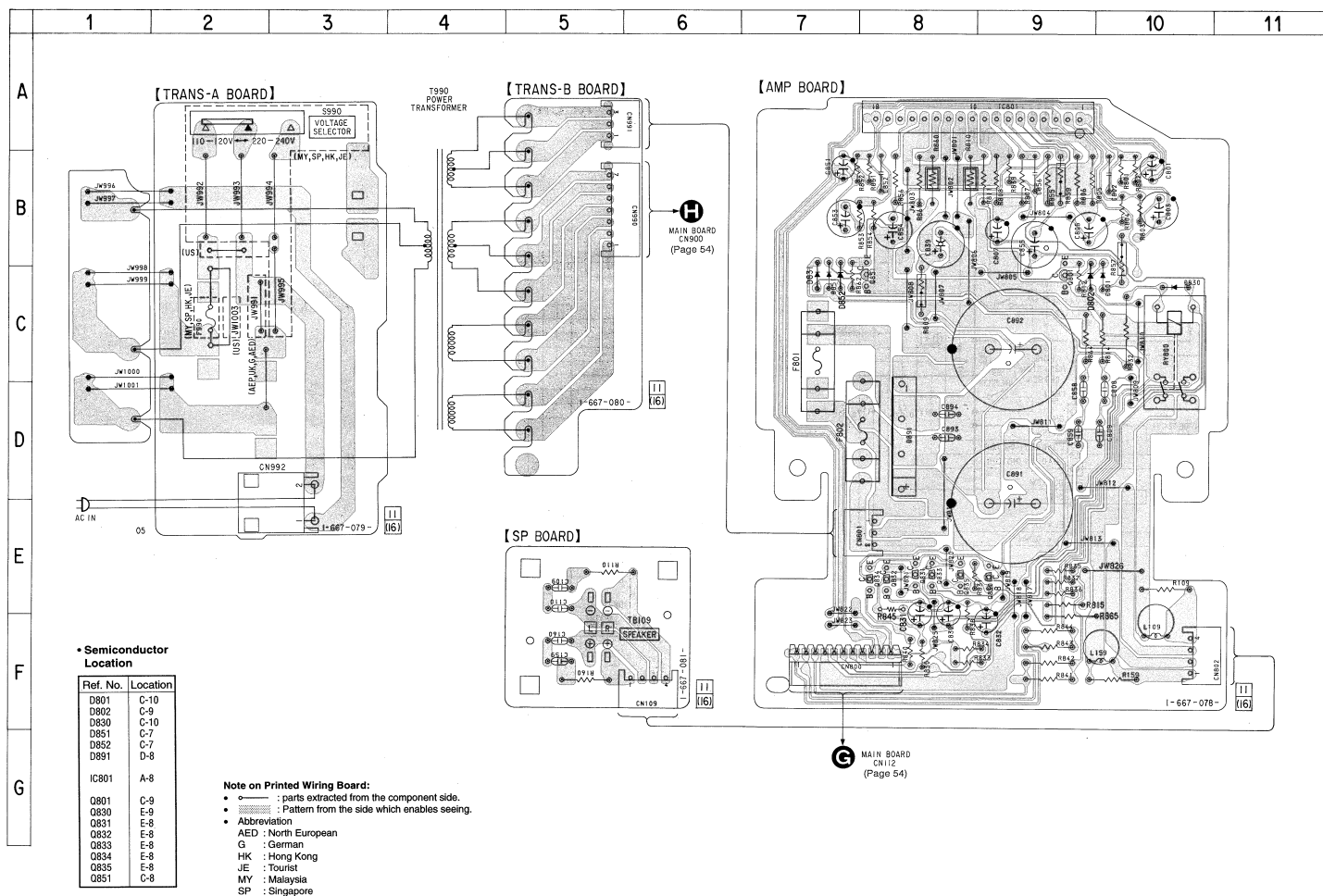
Ref. No.	Location
D1	A-4
D2	A-4
Q1	A-3
Q2	A-5
Q3	A-5

6-14. SCHEMATIC DIAGRAM – MD (Motor/Sensor) Section –

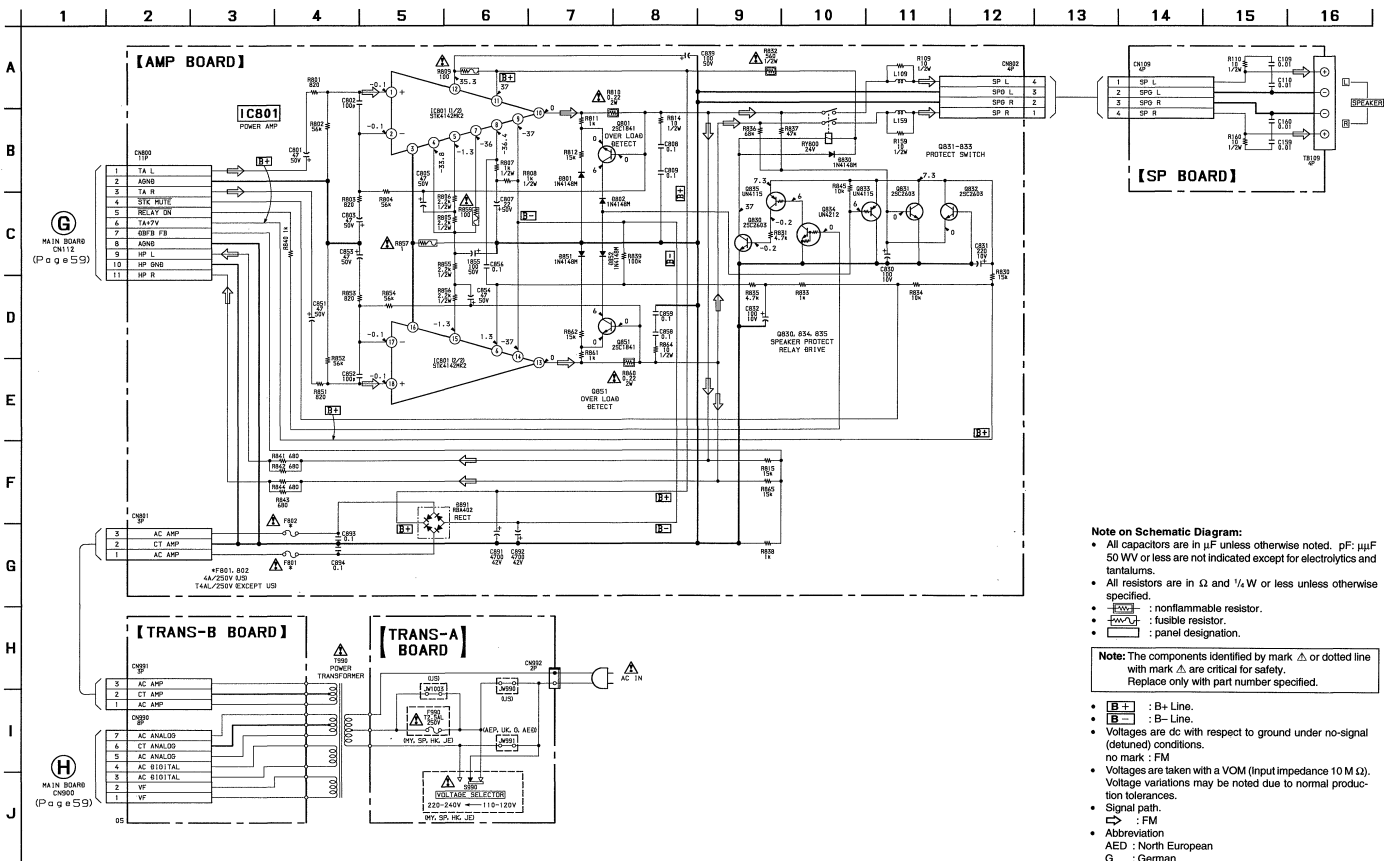


- Note on Schematic Diagram:**
- All capacitors are in μF unless otherwise noted. pF: μpF 50 WV or less are not indicated except for electrolytics and tantalums.
 - All resistors are in Ω and $\frac{1}{4}W$ or less unless otherwise specified.
 - [B+]: B+ Line.
 - Voltages are dc with respect to ground under no-signal conditions.
 - no mark: PLAY (MD).
 - Voltages are taken with a VOM (input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.

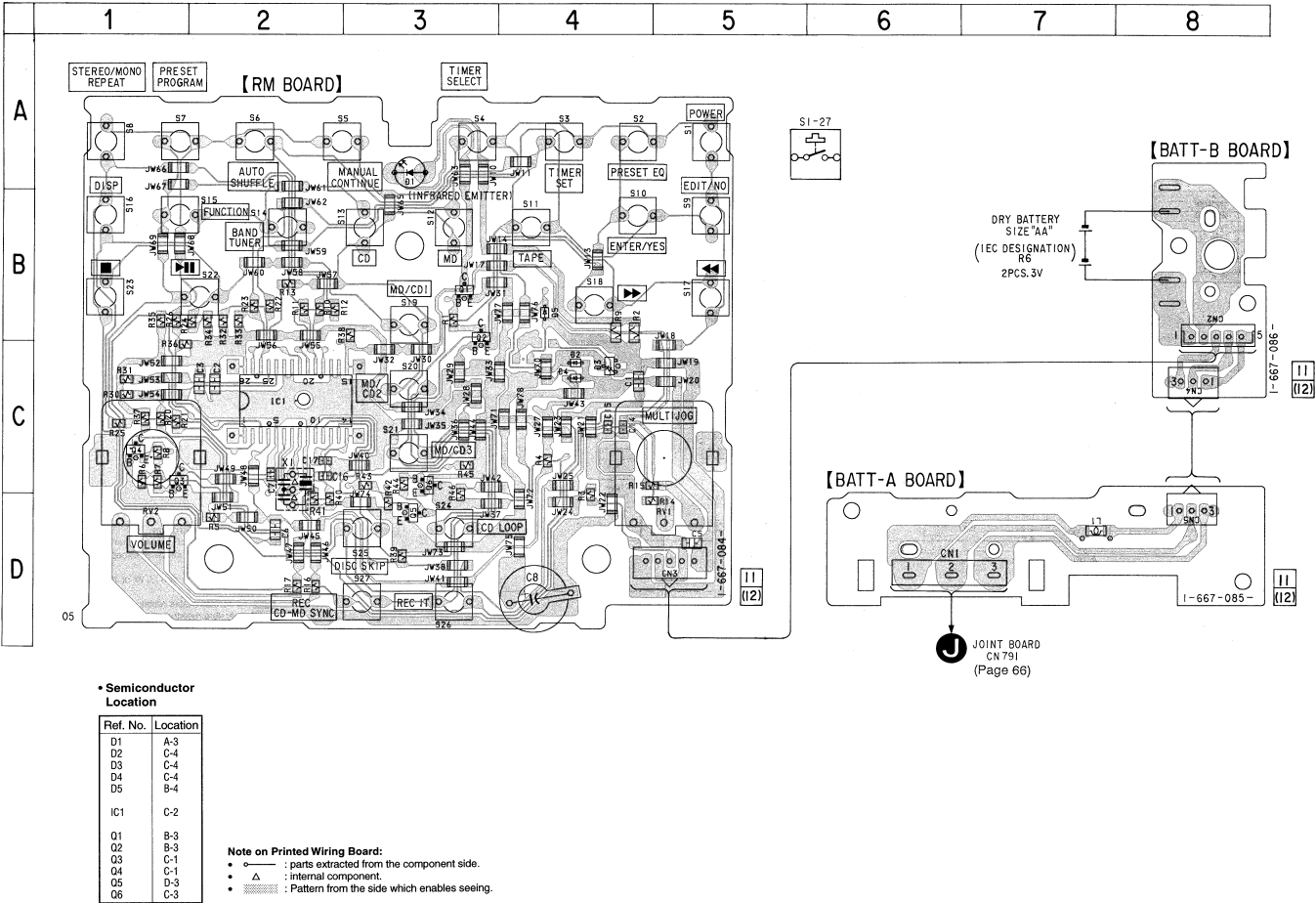
6-15. PRINTED WIRING BOARDS – POWER/AMPLIFIER Section – • See page 106 for Circuit Boards Location.



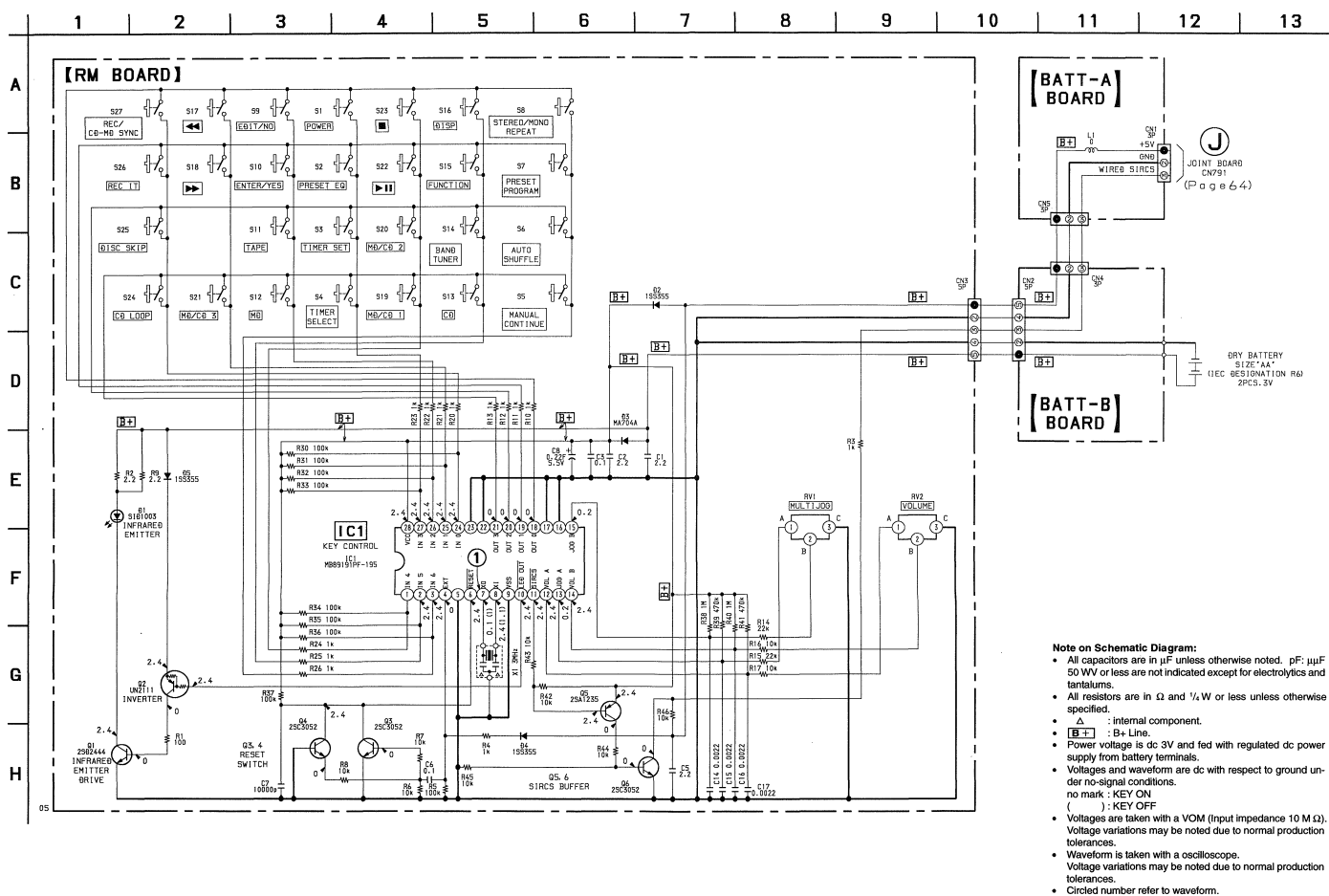
6-16. SCHEMATIC DIAGRAM – POWER/AMPLIFIER Section –



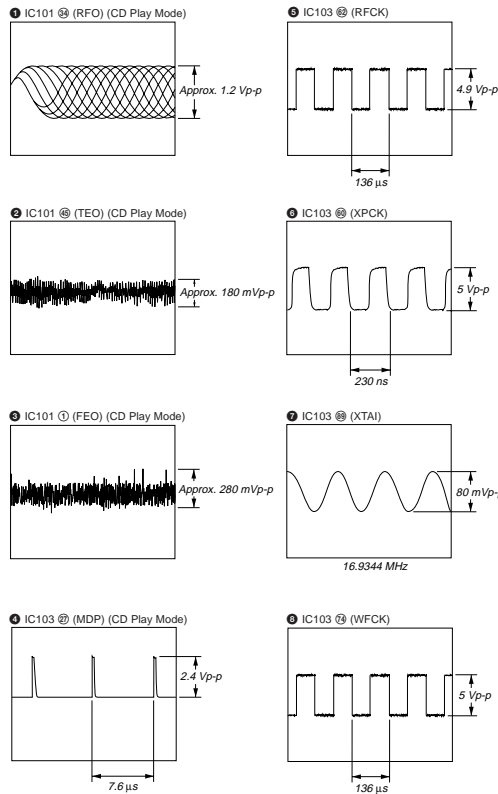
6-17. PRINTED WIRING BOARDS – DETACHABLE CONTROLLER Section – • See page 106 for Circuit Boards Location.



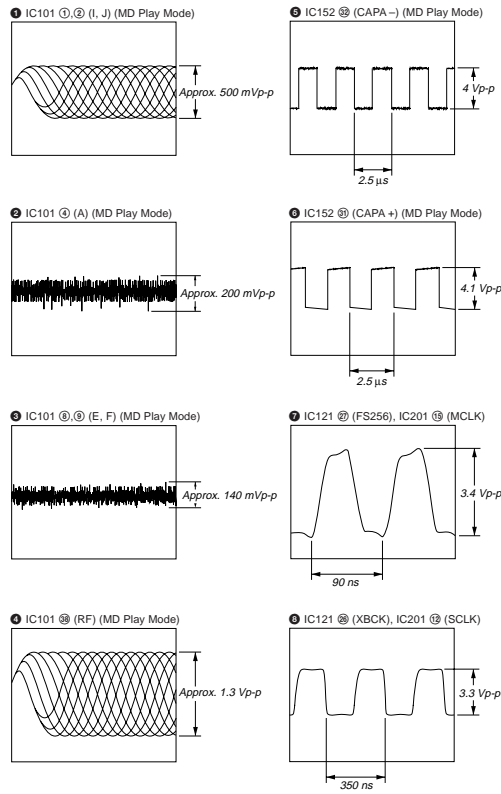
6-18. SCHEMATIC DIAGRAM - DETACHABLE CONTROLLER Section - • See page 85 for Waveform, and see page 105 for IC Pin Function Description.



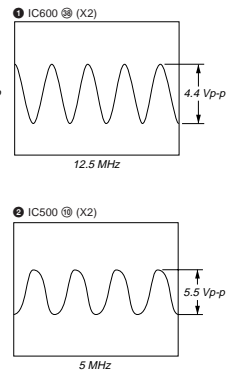
• Waveforms
– BD (CD) BOARD –



– BD (MD) BOARD –

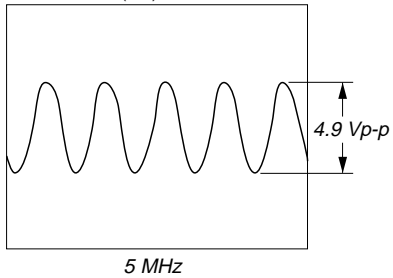


– SUB BOARD –



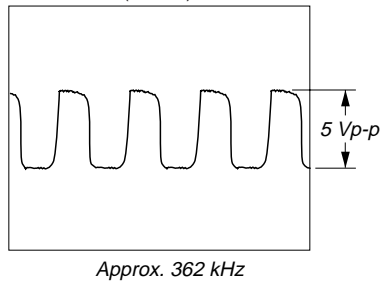
– MAIN BOARD –

① IC400 ⑩ (X2)



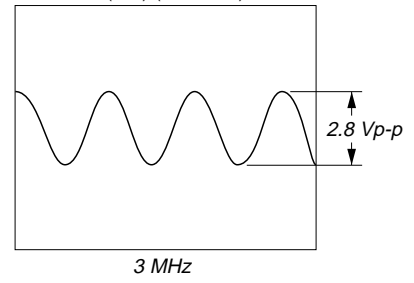
– PANEL BOARD –

① IC700 ⑳ (XOUT)

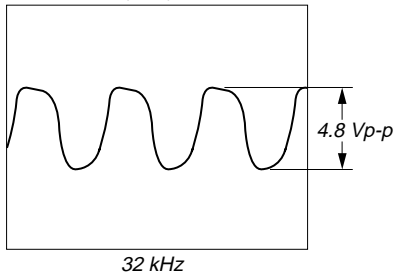


– RM BOARD –

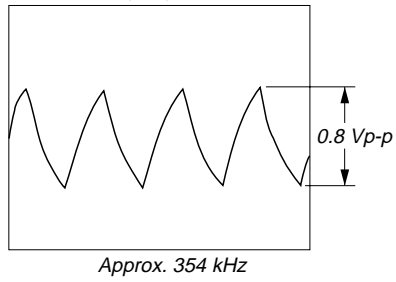
① IC1 ⑦ (XO) (KEY ON)



② IC400 ⑬ (XT2)



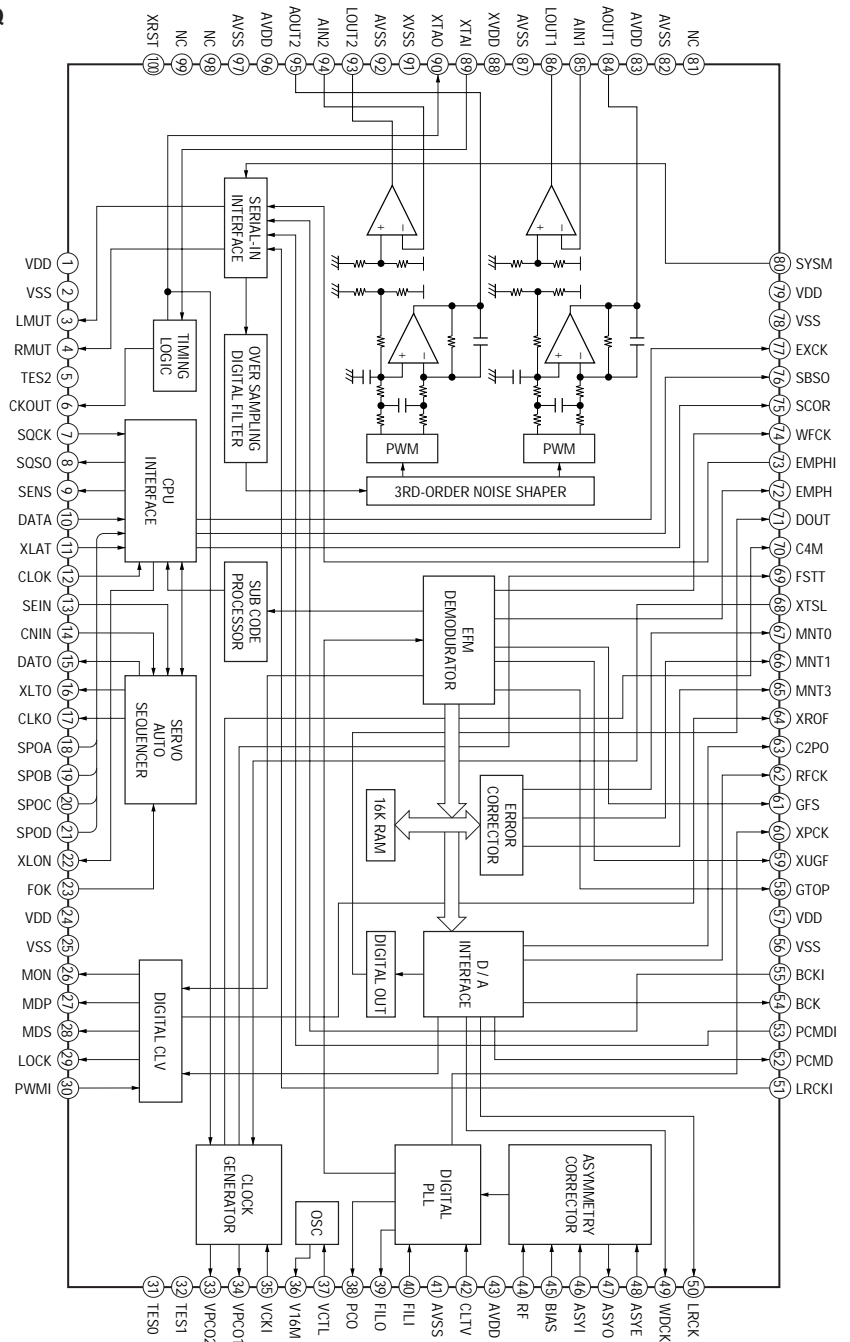
② IC700 ㉑ (XIN)



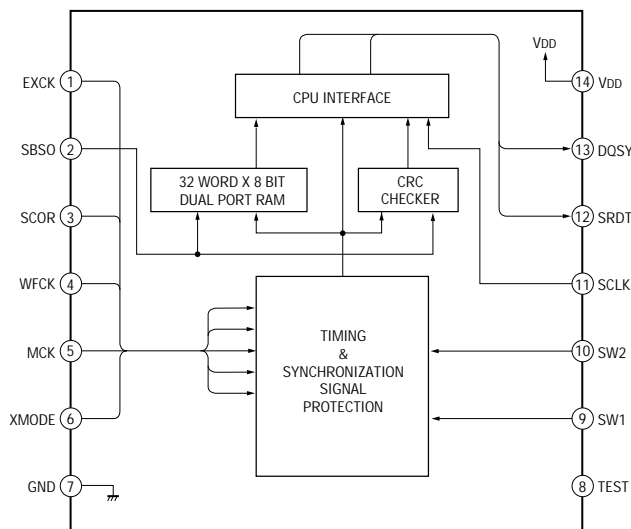
IC101 CXA1992AR



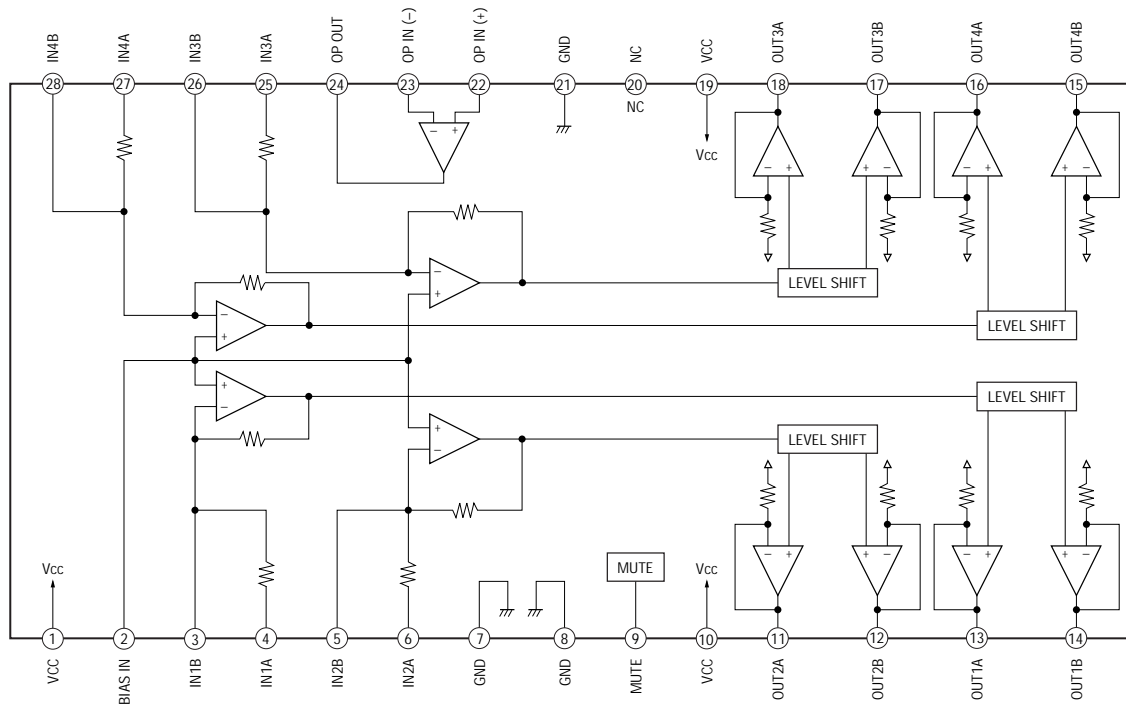
IC103 CXD2519Q



IC104 LC89170M-TLM

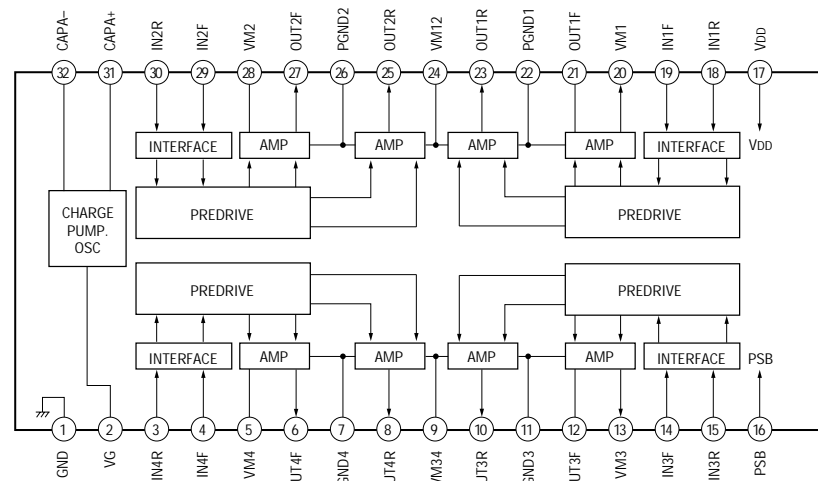


IC102 BA5941FP-E2

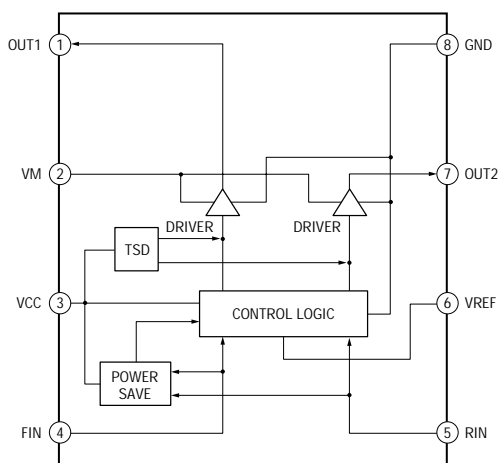


– BD (MD) BOARD –

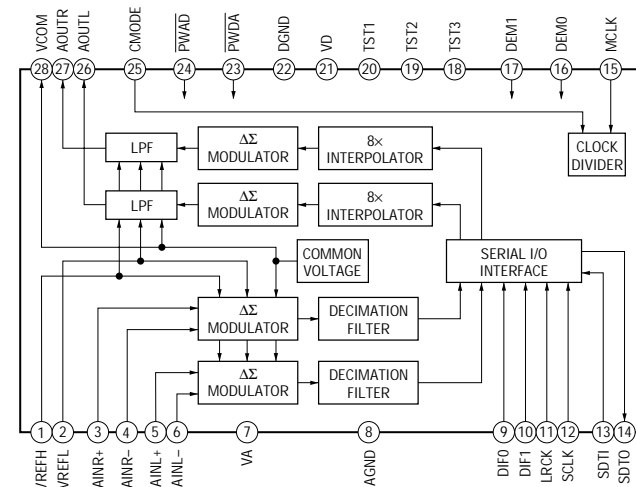
IC152 BH6511FS-E2



IC172 BA6287F

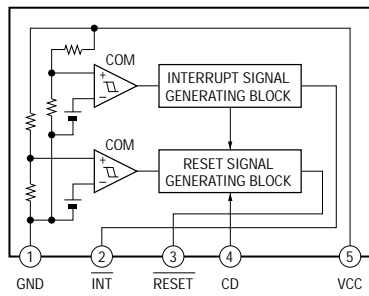


IC201 AK4520A-VF-E2



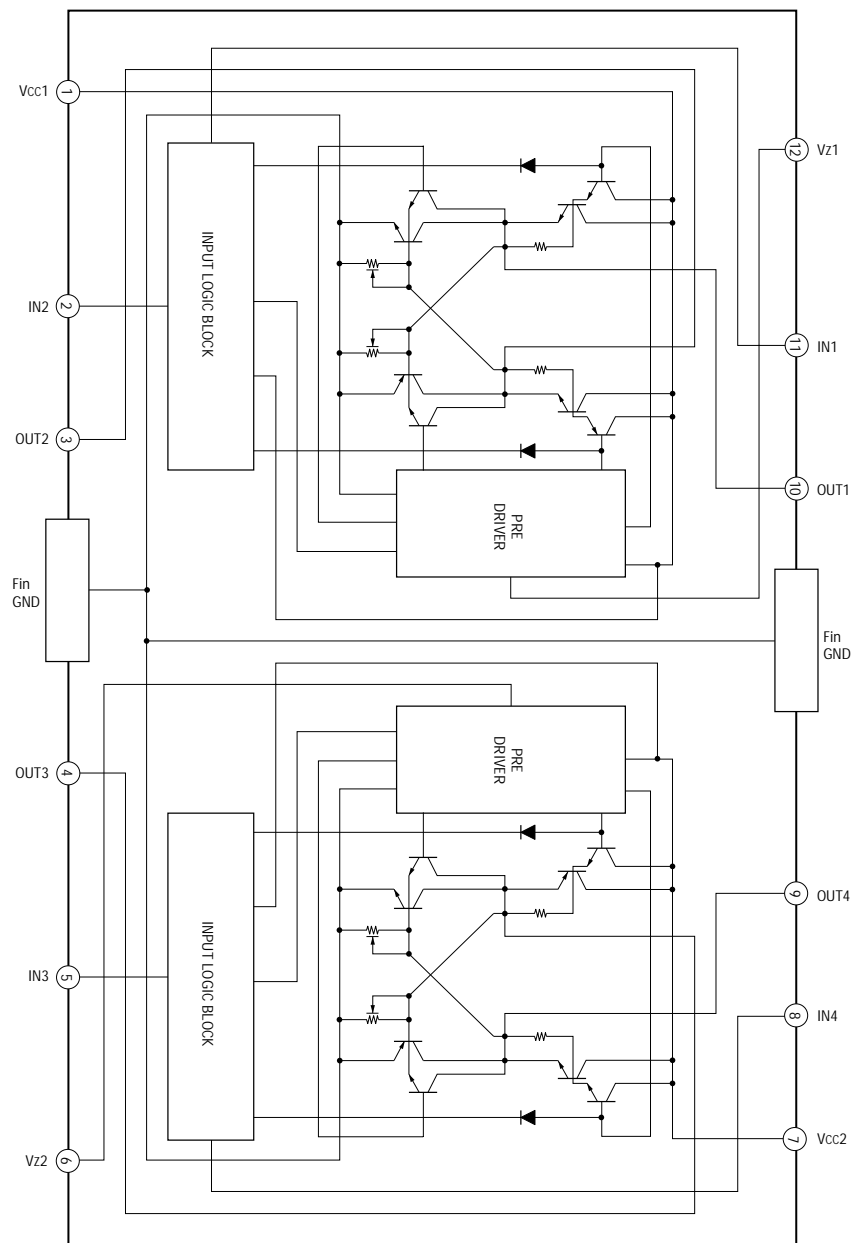
– SUB BOARD –

IC501 M62016L

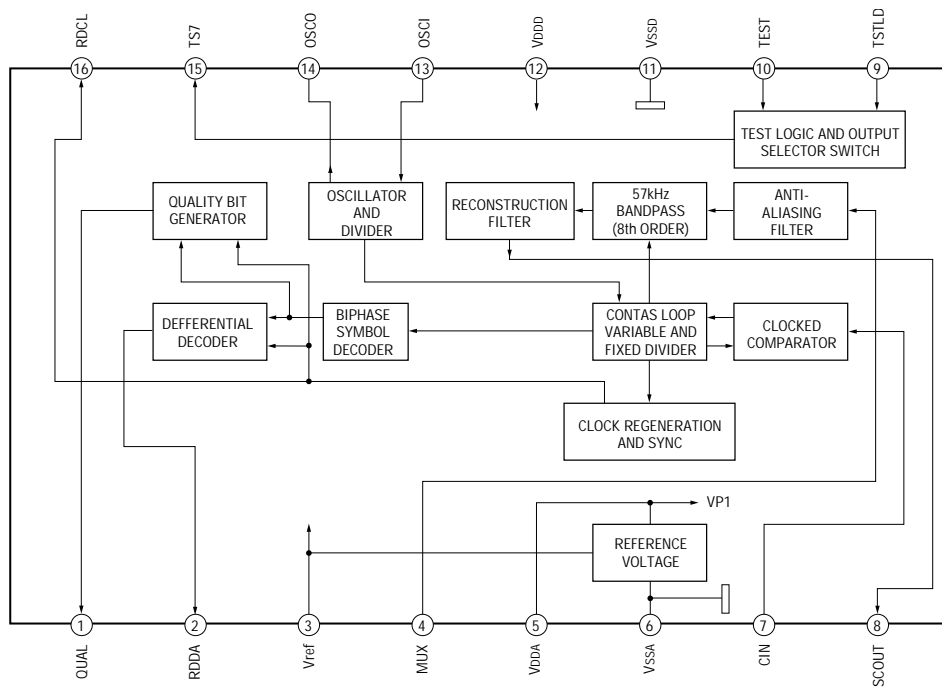


– SUB BOARD/CDM BOARD –

IC560 (SUB BOARD), IC690 (CDM BOARD) LB1648

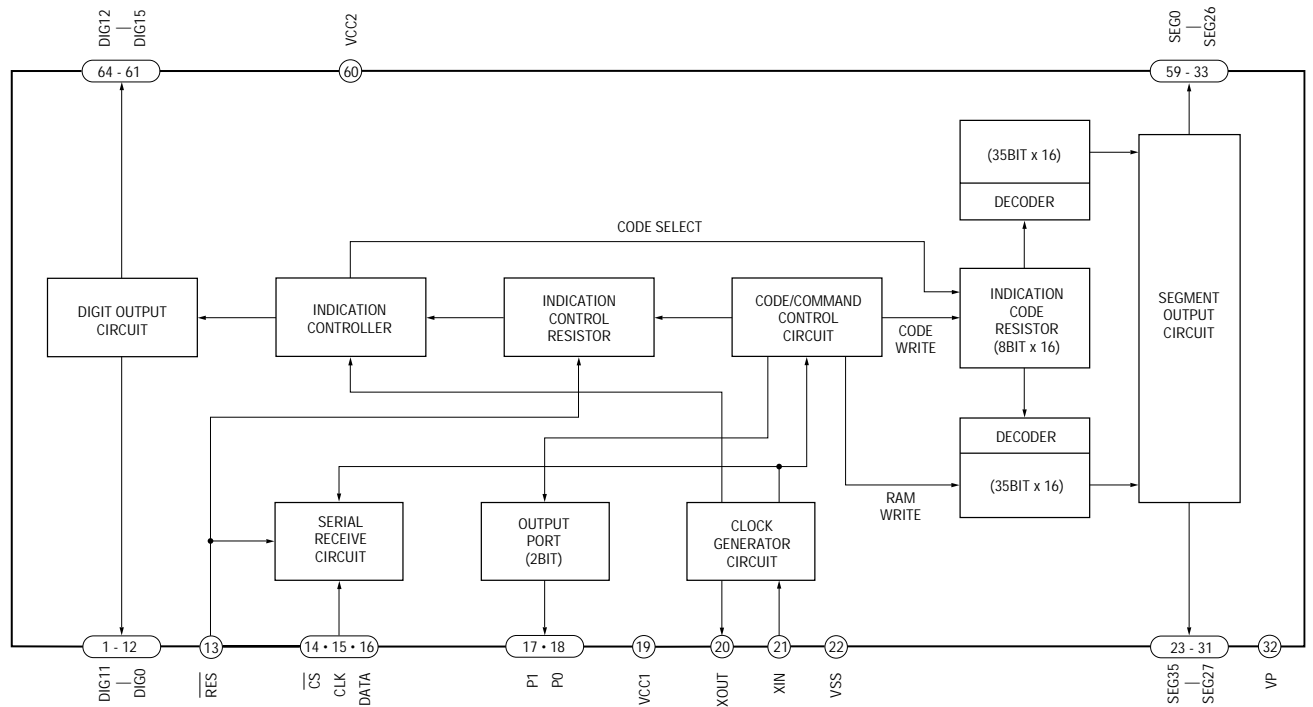


– MAIN BOARD –
IC361 BU1922-E2

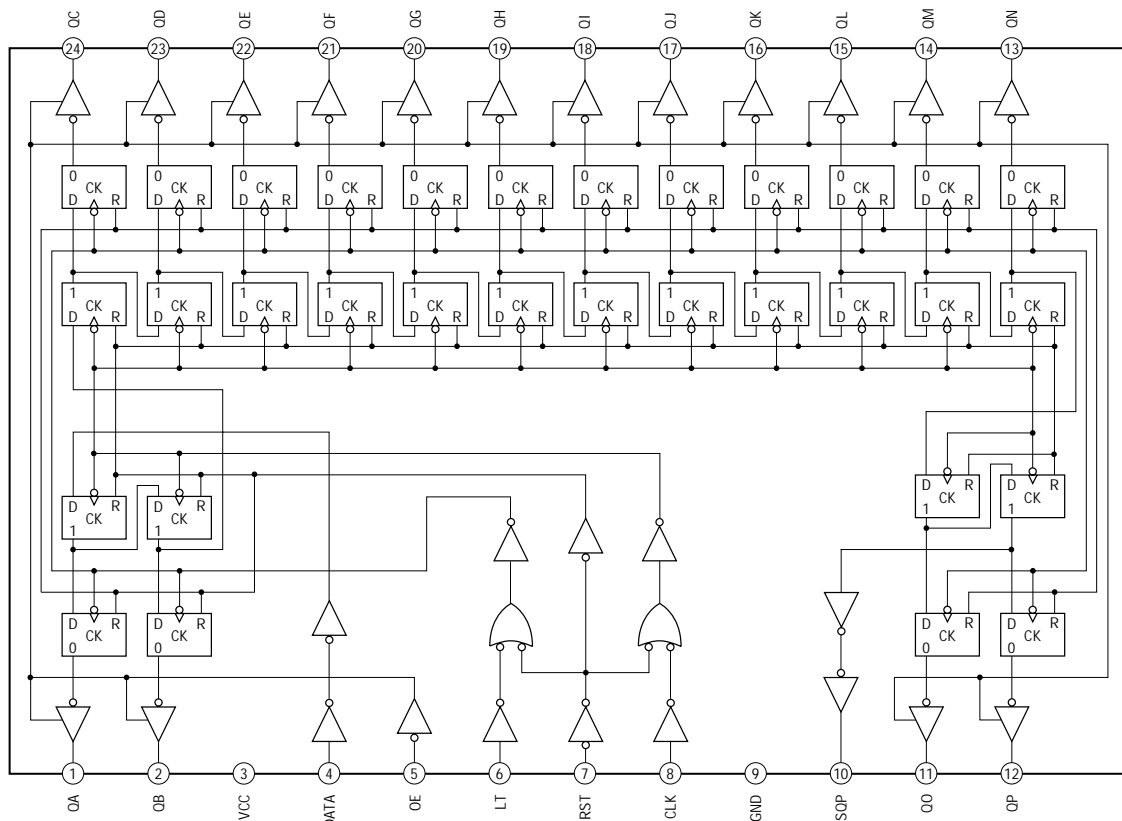


– PANEL BOARD –

IC700 M66004M8FP-200D



IC701 M66310FP-E2



6-19. IC PIN FUNCTION DESCRIPTION

• BD (MD) BOARD IC101 CXA2523AR (RF AMPLIFIER, FOCUS/TRACKING ERROR AMPLIFIER)

Pin No.	Pin Name	I/O	Function
1	I	I	I-V converted RF signal I input from the optical pick-up block detector
2	J	I	I-V converted RF signal J input from the optical pick-up block detector
3	VC	O	Middle point voltage (+1.65V) generation output terminal
4 to 9	A to F	I	Signal input from the optical pick-up detector
10	PD	I	Light amount monitor input terminal
11	APC	O	Laser amplifier output terminal to the automatic power control circuit
12	APCREF	I	Reference voltage input terminal for setting laser power
13	GND	—	Ground terminal
14	TEMPI	I	Connected to the temperature sensor
15	TEMPR	O	Output terminal for a temperature sensor reference voltage
16	SWDT	I	Writing serial data input from the CXD2652AR (IC121)
17	SCLK	I	Serial clock signal input from the CXD2652AR (IC121)
18	XLAT	I	Serial latch signal input from the CXD2652AR (IC121)
19	XSTBY	I	Standby signal input terminal “L”: standby (fixed at “H” in this set)
20	F0CNT	I	“Center frequency control voltage input terminal of internal circuit (BPF22, BPF3T, EQ) input from the CXD2652AR (IC121)”
21	VREF	O	Reference voltage output terminal Not used (open)
22	EQADJ	I	Center frequency setting terminal for the internal circuit (EQ)
23	3TADJ	I	Center frequency setting terminal for the internal circuit (BPF3T)
24	VCC	—	Power supply terminal (+3.3V)
25	WBLADJ	I	Center frequency setting terminal for the internal circuit (BPF22)
26	TE	O	Tracking error signal output to the CXD2652AR (IC121)
27	CSLED	I	Connected to the external capacitor for low-pass filter of the sled error signal
28	SE	O	Sled error signal output to the CXD2652AR (IC121)
29	ADFM	O	FM signal output of the ADIP
30	ADIN	I	Receives a ADIP FM signal in AC coupling
31	ADAGC	I	Connected to the external capacitor for ADIP AGC
32	ADFG	O	ADIP duplex signal (22.05 kHz \pm 1 kHz) output to the CXD2652AR (IC121)
33	AUX	O	Auxiliary signal (I3 signal/temperature signal) output to the CXD2652AR (IC121)
34	FE	O	Focus error signal output to the CXD2652AR (IC121)
35	ABCD	O	Light amount signal (ABCD) output to the CXD2652AR (IC121)
36	BOTM	O	Light amount signal (RF/ABCD) bottom hold output to the CXD2652AR (IC121)
37	PEAK	O	Light amount signal (RF/ABCD) peak hold output to the CXD2652AR (IC121)
38	RF	O	Playback EFM RF signal output to the CXD2652AR (IC121)
39	RFAGC	I	Connected to the external capacitor for RF auto gain control circuit
40	AGCI	I	Receives a RF signal in AC coupling
41	COMPO	O	User comparator output terminal Not used (open)
42	COMPP	I	User comparator input terminal Not used (fixed at “L”)
43	ADDC	I	Connected to the external capacitor for cutting the low band of the ADIP amplifier
44	OPO	O	User operational amplifier output terminal Not used (open)
45	OPN	I	User operational amplifier inversion input terminal Not used (fixed at “L”)
46	RFO	O	RF signal output terminal
47	MORFI	I	Receives a MO RF signal in AC coupling
48	MORFO	O	MO RF signal output terminal

• **BD (MD) BOARD IC121 CXD2652AR**

(DIGITAL SIGNAL PROCESSOR, DIGITAL SERVO PROCESSOR, EFM/ACIRC ENCODER/DECODER, SHOCK PROOF MEMORY CONTROLLER, ATRAC ENCODER/DECODER)

Pin No.	Pin Name	I/O	Function
1	MNT0 (FOK)	O	Focus OK signal output to the system controller (IC316) "H" is output when focus is on
2	MNT1(SHCK)	O	Track jump detection signal output to the system controller (IC316)
3	MNT2 (XBUSY)	O	Monitor 2 signal output to the system controller (IC316)
4	MNT3 (SLOC)	O	Monitor 3 signal output to the system controller (IC316)
5	SWDT	I	Writing data signal input from the system controller (IC316)
6	SCLK	I	Serial clock signal input from the system controller (IC316)
7	XLAT	I	Serial latch signal input from the system controller (IC316)
8	SRDT	O (3)	Reading data signal output to the system controller (IC316)
9	SENS	O (3)	Internal status (SENSE) output to the system controller (IC316)
10	XRST	I	Reset signal input from the system controller (IC316) "L": reset
11	SQSY	O	Subcode Q sync (SCOR) output to the system controller (IC316) "L" is output every 13.3 msec Almost all, "H" is output
12	DQSY	O	Digital In U-bit CD format subcode Q sync (SCOR) output to the system controller (IC316) "L" is output every 13.3 msec Almost all, "H" is output
13	RECP	I	Laser power selection signal input from the system controller (IC316) "H": recording mode, "L": playback mode
14	XINT	O	Interrupt status output to the system controller (IC316)
15	TX	I	Recording data output enable signal input from the system controller (IC316) Writing data transmission timing input (Also serves as the magnetic head on/off output)
16	OSCI	I	System clock signal (512Fs=22.5792 MHz) input from the A/D, D/A converter (IC201)
17	OSCO	O	System clock signal (512Fs=22.5792 MHz) output terminal Not used (open)
18	XTSL	I	Input terminal for the system clock frequency setting "L": 45.1584 MHz, "H": 22.5792 MHz (fixed at "H" in this set)
19	RVDD	—	Power supply terminal (+3.3V) (digital system)
20	RVSS	—	Ground terminal (digital system)
21	DIN	I	Digital audio signal input terminal when recording mode (for optical in)
22	DOUT	O	Digital audio signal output terminal when playback mode (for optical out) Not used
23	ADDT	I	Recording data input from the A/D, D/A converter (IC201)
24	DADT	O	Playback data output to the A/D, D/A converter (IC201)
25	LRCK	O	L/R sampling clock signal (44.1 kHz) output to the A/D, D/A converter (IC201)
26	XBCK	O	Bit clock signal (2.8224 MHz) output to the A/D, D/A converter (IC201)
27	FS256	O	Clock signal (11.2896 MHz) output terminal Not used (open)
28	DVDD	—	Power supply terminal (+3.3V) (digital system)
29 to 32	A03 to A00	O	Address signal output to the D-RAM (IC124)
33	A10	O	Address signal output to the external D-RAM Not used (open)
34 to 38	A04 to A08	O	Address signal output to the D-RAM (IC124)
39	A11	O	Address signal output to the external D-RAM Not used (open)
40	DVSS	—	Ground terminal (digital system)
41	XOE	O	Output enable signal output to the D-RAM (IC124)
42	XCAS	O	Column address strobe signal output to the D-RAM (IC124)
43	A09	O	Address signal output to the D-RAM (IC124)
44	XRAS	O	Row address strobe signal output to the D-RAM (IC124)
45	XWE	O	Write enable signal output to the D-RAM (IC124)

* O (3) for 3-state output in the column I/O.

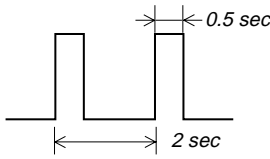
Pin No.	Pin Name	I/O	Function
46	D1	I/O	Two-way data bus for the D-RAM (IC124)
47	D0	I/O	
48	D2	I/O	
49	D3	I/O	
50	MVCI	I	Digital in PLL oscillation input from the external VCO Not used (fixed at “L”)
51	ASYO	O	Playback EFM full-swing output
52	ASYI	I (A)	Playback EFM asymmetry comparator voltage input
53	AVDD	—	Power supply terminal (+3.3V) (analog system)
54	BIAS	I (A)	Playback EFM asymmetry circuit constant current input
55	RFI	I (A)	Playback EFM RF signal input from the CXA2523R (IC101)
56	AVSS	—	Ground terminal (analog system)
57	PDO	O (3)	Phase comparison output for clock playback analog PLL of the playback EFM Not used (open)
58	PCO	O (3)	Phase comparison output for master clock of the recording/playback EFM master PLL
59	FILI	I (A)	Filter input for master clock of the recording/playback master PLL
60	FILO	O (A)	Filter output for master clock of the recording/playback master PLL
61	CLTV	I (A)	Internal VCO control voltage input of the recording/playback master PLL
62	PEAK	I (A)	Light amount signal (RF/ABCD) peak hold input from the CXA2523R (IC101)
63	BOTM	I (A)	Light amount signal (RF/ABCD) bottom hold input from the CXA2523R (IC101)
64	ABCD	I (A)	Light amount signal (ABCD) input from the CXA2523R (IC101)
65	FE	I (A)	Focus error signal input from the CXA2523R (IC101)
66	AUX1	I (A)	Auxiliary signal (I3 signal/temperature signal) input from the CXA2523R (IC101)
67	VC	I (A)	Middle point voltage (+1.65V) input from the CXA2523R (IC101)
68	ADIO	O (A)	Monitor output of the A/D converter input signal Not used (open)
69	AVDD	—	Power supply terminal (+3.3V) (analog system)
70	ADRT	I (A)	A/D converter operational range upper limit voltage input terminal (fixed at “H” in this set)
71	ADRB	I (A)	A/D converter operational range lower limit voltage input terminal (fixed at “L” in this set)
72	AVSS	—	Ground terminal (analog system)
73	SE	I (A)	Sled error signal input from the CXA2523R (IC101)
74	TE	I (A)	Tracking error signal input from the CXA2523R (IC101)
75	AUX2	I (A)	Auxiliary signal input terminal Not used (fixed at “H”)
76	DCHG	I (A)	Connected to the +3.3V power supply
77	APC	I (A)	Error signal input for the laser automatic power control Not used (fixed at “H”)
78	ADFG	I	ADIP duplex FM signal (22.05 kHz \pm 1 kHz) input from the CXA2523R (IC101)
79	F0CNT	O	Filter f0 control signal output to the CXA2523R (IC101)
80	XLRF	O	Serial latch signal output to the CXA2523R (IC101)
81	CKRF	O	Serial clock signal output to the CXA2523R (IC101)
82	DTRF	O	Writing data output to the CXA2523R (IC101)
83	APCREF	O	Control signal output to the reference voltage generator circuit for the laser automatic power control
84	LDDR	O	PWM signal output for the laser automatic power control Not used (open)
85	TRDR	O	Tracking servo drive PWM signal (–) output to the BH6511FS (IC152)
86	TFDR	O	Tracking servo drive PWM signal (+) output to the BH6511FS (IC152)
87	DVDD	—	Power supply terminal (+3.3V) (digital system)
89	FRDR	O	Focus servo drive PWM signal (–) output to the BH6511FS (IC152)

* I (A) for analog input, O (3) for 3-state output, and O (A) for analog output in the column I/O.

Pin No.	Pin Name	I/O	Function
90	FS4	O	Clock signal (176.4 kHz) output terminal (X'tal system) Not used (open)
91	SRDR	O	Sled servo drive PWM signal (–) output to the BH6511FS (IC152)
92	SFDR	O	Sled servo drive PWM signal (+) output to the BH6511FS (IC152)
93	SPRD	O	Spindle servo drive PWM signal (–) output to the BH6511FS (IC152)
94	SPFD	O	Spindle servo drive PWM signal (+) output to the BH6511FS (IC152)
95	TEST0	I	Input terminal for the test (fixed at “L”)
96	TEST1	I	
97	TEST2	I	
98	TEST3	I	
99	DVSS	—	Ground terminal (digital system)
100	EFMO	O	EFM signal output to over write head drive (IC181)

• BD (MD) BOARD IC316 M30610MC-109FP (MD SYSTEM CONTROL)

Pin No.	Pin Name	I/O	Function
1	JOG0	I	Encoder switch signal input terminal Not used (fixed at “L”)
2	JOG1	I	Encoder switch signal input terminal Not used (fixed at “L”)
3,4	————	I	Not used (fixed at “L”)
5	SQSY	I	Subcode Q sync (SCOR) input from the CXD2652AR (IC121)
6	REMCN	I	Remote control signal input (fixed at “H”)
7	EMP	O	De-emphasis control signal output to the AK4520 (IC201)
8	BYTE	I	External data bus line byte select signal input terminal “L”:16bit “H”: 8bit (fixed at “L”)
9	CNVSS	—	Ground terminal
10	XIN-T	I	Sub system clock input terminal Not used (fixed at “L”)
11	XOUT-T	O	Sub system clock output terminal Not used (pull down)
12	SYSTEM-RST	I	MD reset signal input from the master controller (IC500)
13	XOUT	O	Main system clock signal output terminal (7MHz)
14	GND	—	Ground terminal
15	XIN	I	Main system clock signal input terminal (7MHz)
16	+3V	—	Power supply terminal (+3.3V)
17	————	I	Not used (fixed at “H”)
18	AMUTE	O	Mute control signal output terminal Not used (fixed at “L”)
19	PWR-DWN	I	Power down detect signal input terminal
20	DQSY	I	Digital in U-bit CD format subcode Q sync (SCOR) input from the CXD2652SAR (IC121)
21	STB	I	Stand-by signal input terminal Not used (pull down)
22	DA-RST	O	D/A converter reset signal output terminal Not used (pull down)
23	XINT	I	Interrupt status input from the CXD2652AR (IC121)
24	DA-EN	O	D/A converter enable signal output to the AK4520 (IC201)
25	AD-EN	O	A/D converter enable signal output to the AK4520 (IC201)
26	MEC-BUSY	O	Mecha-busy signal output to the master controller (IC500)
27	FLCS	O	Display clear signal output terminal Not used (pull down)
28	FLCLK	O	Display data clock signal output terminal Not used (pull down)
29	————	I	Not used (fixed at “L”)
30	FLDATA	O	Display data signal output terminal Not used (pull down)
31	TXD	O	MD control data signal output to the master controller (IC500)
32	RXD	I	MD control data signal input to the master controller (IC500)
33	CLK	I	MD control data clock signal input to the master controller (IC500)
34	MAS-BUSY	I	Master-busy signal input from the master controller (IC500)
35	SWDT	O	Writing data signal output to the CXD2652AR (IC121)
36	SRDT	I	Reading data signal input from the CXD2652AR (IC121)
37	SCLK	O	Serial clock signal output to the CXD2652AR (IC121)
38	XLAT	O	Serial latch signal output to the CXD2652AR (IC121)
39	————	O	Not used (fixed at “L”)
40	DIG-RST	O	Reset signal output enable signal output to the CXD2652AR (IC121) “L”:reset
41	SENS	I	Status (SENSE) input from the CXD2652AR (IC121)
42	SCTX	O	Recording data output enable signal output to the CXD2652AR (IC121)
43	————	I	Not used (fixed at “L”)
44	WRPWR	O	Laser power selection signal output to the CXD2652AR (IC121) “H”:rec, “L”:play
45	MNT3	I	Monitor signal input from the CXD2652AR (IC121)
46	MNT2	I	Busy signal input from the CXD2652AR (IC121)
47	MNT1	I	Track jump detection signal input from the CXD2652AR (IC121)
48	MNT0	I	Focus OK signal input from the CXD2652AR (IC121) “L”:NG

Pin No.	Pin Name	I/O	Function
49	LDON	O	Laser diode ON signal output terminal "H":laser diode ON
50	MOD	O	<p>Laser modulation select signal output Playback power: "L", Stop: "H", Recording power:</p> 
51	LDIN	O	Loading-in signal output terminal Not used (open)
52	LDOUT	O	Loading-out signal output terminal Not used (open)
53	LD-LOW	O	Loading motor voltage control signal output to the loading motor driver Not used (open)
54	PROTECT	I	PROTECT switch (S683) detect signal input terminal "H": protect
55	REFLECT	I	REFLECT switch (S682) detect signal input terminal "L": high reflection rate disc, "H": low reflection rate disc
56	PACK-IN	I	MD PACK IN switch detect signal input terminal Not used (fixed at "H")
57	PACK-OUT	I	PACK OUT switch detect signal input terminal Not used (fixed at "H")
58	CHUCK-IN	I	CHUCKING IN switch detect signal input terminal Not used (fixed at "H")
59	LIMIT-IN	I	LIMIT-IN switch (S681) detect signal input terminal The optical pick-up is inner position when "L"
60	REC. P	I	REC POSITION switch detect signal input terminal Not used (fixed at "H")
61	PB. P	I	PB POSITION switch detect signal input terminal Not used (fixed at "L")
62	+3.3V	—	Power supply terminal (+3.3V)
63	————	—	Not used (fixed at "L")
64	GND	—	Ground terminal
65 to 72	————	—	Not used (fixed at "L")
73	HEAD SW UP	I	Over write head up switch (S6) detect signal input terminal "L":active
74	HEAD SW DOWN	I	Over write head down switch (S7) detect signal input terminal "L":active
75	HEAD UP	O	Over write head UP/DOWN motor (M905) control signal output terminal *1
76	HEAD DOWN	O	Over write head UP/DOWN motor (M905) control signal output terminal *1
77, 78	————	—	Not used (fixed at "L")
79	SDA	I/O	Two-way data bus for the EEPROM (IC171)
80	SCL	O	Clock signal output to the EEPROM (IC171)
81	————	I	Not used (fixed at "L")
82	————	I	Not used (fixed at "H")
83	MODE	I	Input terminal for setting MD single or changer mode "L":single mode, "H":changer mode (fixed at "H" in this set)
84, 85	————	I	Not used (fixed at "L")
86	REC/PB	O	REC/PB status control signal output terminal Not used (pull down)
87	DOUTXMUTE	O	Mute control signal output terminal Not used (pull down)
88 to 90	————	I	Not used (fixed at "L")
91	KEY0	—	Key signal input terminal Not used (fixed at "H")
92	KEY1	—	Key signal input terminal Not used (fixed at "H")
93	KEY2	—	Key signal input terminal Not used (fixed at "H")
94, 95	————	I	Not used (fixed at "L")
96	AVSS	—	Ground terminal
97	————	I	Not used (fixed at "L")

Pin No.	Pin Name	I/O	Function
98	VREF	—	Power supply terminal (+3.3V)
99	3.3V	—	Power supply terminal (+3.3V)
100	————	I	Not used (fixed at “L”)

*1 Over write head UP/DOWN motor (M905) control

Operation Terminal	UP	DOWN	BRAKE	RUN IDLE
HEAD UP (pin ⑦⑤)	“H”	“L”	“H”	“L”
HEAD DOWN (pin ⑦⑥)	“L”	“H”	“H”	“L”

• SUB BOARD IC500 μ PD78078GF-075-3BA (MASTER CONTROLLER)

Pin No.	Pin Name	I/O	Function
1 to 4	DATA0 to DATA3	I/O	Two way data bus to the system controller (IC400) and CD mechanism controller (IC600)
5	CLK OUT	O	Clock signal output to the system controller (IC400) and CD mechanism controller (IC600)
6, 7	NC	I	Not used (fixed at "L")
8	AC CUT	I	Power down detect signal input terminal "L": Power down
9	VSS	–	Ground terminal
10	X2	O	Main system clock output terminal (5 MHz)
11	X1	I	Main system clock input terminal (5 MHz)
12	VDD	–	Power supply terminal (+5 V)
13	XT2	O	Sub system clock output terminal Not used (open)
14	XT1	I	Sub system clock input terminal Not used (fixed at "L")
15	RESET	I	System reset signal input from the reset signal generator (IC400) "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
16	CLK IN	I	Clock signal input from the system controller (IC400) and CD mechanism controller (IC600)
17	BUSY	O	Busy signal output to the system controller (IC400) and CD mechanism controller (IC600)
18	SENSOR1	I	Detection input from the elevator position sensor (D1)
19 to 22	NC	I	Not used (fixed at "L")
23	AVDD	–	Power supply terminal (+5 V) (for A/D converter section, analog system)
24	AVREF0	I	Reference voltage input terminal (for A/D converter)
25 to 28	KEY0 to KEY3	I	Key input terminal Not used (fixed at "H")
29	PARA/UART	I	Input terminal for SERIAL/UART setting "L": SERIAL, "H": UART (fixed at "L" in this set)
30	3/5	I	Input terminal for MD changer type setting "L": 3 discs, "H": 5 discs (fixed at "L" in this set)
31	FL14	I	Input terminal for figure number setting of display "L": 14 figures, "H": 13 figures (fixed at "L" in this set)
32	SLAVE	I	Input terminal for separate/complete type setting of MD section and other sections "L": complete type, "H": separate type (fixed at "L" in this set)
33	AVSS	–	Ground terminal (for A/D converter)
34	LOADING D/A	O	D/A output terminal for loading motor drive signal Not used (open)
35	ELEVATOR D/A	O	D/A output terminal for elevator motor drive signal Not used (open)
36	AVREF1	I	Reference voltage input terminal (+5 V) (for D/A converter)
37	RXD (UART)	I	UART data input terminal Not used (fixed at "L")
38	TXD (UART)	O	UART data output terminal Not used (open)
39	NC	I	Not used (fixed at "L")
40	VSS	–	Ground terminal
41	NC	I	Not used (fixed at "L")
42	FL DATA	O	Serial data output terminal to display Not used (open)
43	FL CLK	O	Clock signal output terminal to display Not used (open)
44	FL CS	O	Chip enable signal output terminal to display Not used (open)
45	FL RST	O	Reset signal output terminal to display Not used (open)
46	RXD	I	UART data input terminal from the MD mechanism controller (IC316)
47	TXD	O	UART data output terminal to the MD mechanism controller (IC316)
48	SCK	O	Clock signal output terminal to the MD mechanism controller (IC316)
49	MASTER BUSY	O	Busy signal output terminal to the MD mechanism controller (IC316) "L": busy
50	MEC-BUSY	I	Busy signal input terminal from the MD mechanism controller (IC316) "L": busy
51	MECHA RESET	O	Reset signal output terminal to the MD mechanism controller (IC316) "H": reset
52	SENSOR2	I	Detection input from the elevator position sensor (D2)
53	NC	I	Not used (fixed at "L")
54	LED DIGITAL	O	LED drive signal output terminal for DIGITAL indication Not used (open)
55	LED ANALOG	O	LED drive signal output terminal for ANALOG indication Not used (open)
56	LED MONO	O	LED drive signal output terminal for MONO indication Not used (open)

Pin No.	Pin Name	I/O	Function
57	LED CLR	O	Clear signal output terminal to LED driver Not used (open)
58	LED STB	O	Strobe signal output terminal to LED driver Not used (open)
59	LED CLK	O	Clock signal output terminal to LED driver Not used (open)
60	LED DATA	O	Data output terminal to LED driver Not used (open)
61	FS32	O	LED drive signal output terminal for sampling frequency (FS32) indication Not used (open)
62	FS44	O	LED drive signal output terminal for sampling frequency (FS44) indication Not used (open)
63	FS48	O	LED drive signal output terminal for sampling frequency (FS48) indication Not used (open)
64	CONTINUE	O	LED drive signal output terminal for CONTINUE indication Not used (open)
65	SHUFFLE	O	LED drive signal output terminal for SHUFFLE indication Not used (open)
66	PROGRAM	O	LED drive signal output terminal for PROGRAM indication Not used (open)
67	LED CD SYNC	O	LED drive signal output terminal for CD SYNC indication Not used (open)
68	LED REC IT	O	LED drive signal output terminal for REC IT indication Not used (open)
69, 70	NC	I	Not used (fixed at “L”)
71	VSS	–	Ground terminal
72, 73	NC	I	Not used (fixed at “L”)
74 to 81	PWM0 to PWM7	I	PWM input terminal (fixed at “L” in this set)
82	LOADING IN	O	Motor control signal output terminal to the minidisc loading motor (M903) *1
83	LOADING OUT	O	Motor control signal output terminal to the minidisc loading motor (M903) *1
84	ELEVATOR UP	O	Motor control signal output terminal to the minidisc elevator UP/DOWN motor (M904) *2
85	ELEVATOR DOWN	O	Motor control signal output terminal to the minidisc elevator UP/DOWN motor (M904) *2
86	HOME SW	I	Detection input from the home position detect switch (S8) “L”: home position
87	DISC1 SW	I	Detection input from the disc (DISC1) in detect switch (S1) “L”: disc in
88	DISC2 SW	I	Detection input from the disc in detect switch Not used (fixed at “L”)
89	DISC3 SW	I	Detection input from the disc (DISC2) in detect switch (S3) “L”: disc in
90	DISC4 SW	I	Detection input from the disc in detect switch Not used (fixed at “L”)
91	DISC5 SW	I	Detection input from the disc (DISC3) in detect switch (S5) “L”: disc in
92	OUT SW	I	Detection input from the loading out detect switch (S6) “L”: loading out
93	IN SW	I	Detection input from the loading in detect switch (S7) “L”: loading in
94	MUTE	O	Line mute control signal output terminal Not used (open)
95	ATT	O	–6 dB ATT control signal output terminal Not used (open)
96	DIGITAL SELECT0	O	CD digital/optical-in convert signal output terminal to the optical-in circuit (IC641) “L”: CD digital, “H”: optical-in (fixed at “L” in this set)
97	RESET SW	I	Input terminal from the reset switch (S9) “L”: reset
98	KANA INPUT	I	Input terminal for Japanese letter input function setting “L”: input possible (fixed at “H” in this set)
99	DIGITAL SELECT1	O	Digital-signal convert signal output terminal Not used (open)
100	NC	I	Not used (fixed at “L”)

*1 Minidisc loading motor (M903) control

Terminal \ Operation	IN	OUT	BRAKE	RUN IDLE
LOADING IN (pin ⑧②)	“H”	“L”	“H”	“L”
LOADING OUT (pin ⑧③)	“L”	“H”	“H”	“L”

*2 Minidisc elevator UP/DOWN motor (M904) control

Terminal \ Operation	UP	DOWN	BRAKE
ELEVATOR UP (pin ⑧④)	“H”	“L”	“H”
ELEVATOR DOWN (pin ⑧⑤)	“L”	“H”	“H”

• SUB BOARD IC600 μ PD784215GF-501-3BA (CD MECHANISM CONTROLLER)

Pin No.	Pin Name	I/O	Function
1, 2	—	O	Not used (open)
3	$\overline{\text{LEDLAT}}$	O	Serial latch pulse output terminal to LED driver Not used (open)
4	$\overline{\text{DRVCS}}$	O	Chip select signal output terminal to display Not used (open)
5	$\overline{\text{OE}}$	O	Enable signal output terminal to the S-RAM (IC601) “L”: active
6	$\overline{\text{WE}}$	O	Writing enable signal output terminal to the S-RAM (IC601) “L”: active
7	$\overline{\text{DRVRST}}$	O	Reset signal output terminal to display Not used (open)
8	—	O	Not used (open)
9	VDD	—	Power supply terminal (+5V)
10	$\overline{\text{BDRST}}$	O	Reset signal output terminal to CD section “L”: reset
11	$\overline{\text{BDPWR}}$	O	Power ON/OFF control signal output terminal to main power (+5V) of CD section “L”: power ON
12, 13	—	O	Not used (open)
14	$\overline{\text{LDOUT}}$	O	Motor control signal output terminal to the CD loading motor (M502) *1
15	$\overline{\text{LDIN}}$	O	Motor control signal output terminal to the CD loading motor (M502) *1
16	$\overline{\text{STKDOWN}}$	O	Motor control signal output terminal to the CD elevator UP/DOWN motor (M501) *2
17	$\overline{\text{STKUP}}$	O	Motor control signal output terminal to the CD elevator UP/DOWN motor (M501) *2
18	$\overline{\text{OUTSW}}$	I	Detection input from the tray OPEN/CLOSE detect switch (SW505) “H”: tray is close, “L”: tray is open
19	$\overline{\text{INSW}}$	I	Detection input from the tray OPEN/CLOSE detect switch (SW505) “H”: tray is open, “L”: tray is close
20	$\overline{\text{STKSW}}$	I	Detection input from the STOCKER switch (SW501) “L”: sub tray set into the stocker
21	$\overline{\text{MIDSW}}$	I	Detection input from the MID switch (SW504) “L”: sub tray move between tray and stocker
22	TEST	I	Input terminal for test (fixed at “L”)
23	$\overline{\text{INITSW}}$	I	Detection input from the INIT switch (SW502) “L”: tray set down to play position
24	$\overline{\text{COUNTSW}}$	I	Detection input from the COUNT switch (SW503) “L”: elevator up (or down) each sub tray stock position
25	$\overline{\text{PANEL SW}}$	I	Detection input from the CD tray door open/close detect switch (S790) “L”: open, “H”: close
26	—	I	Not used (fixed at “L”)
27	ADJ	I	Input terminal for test mode setting of CD section (usually fixed at “H”)
28	$\overline{\text{AMUTE}}$	O	Analog mute control signal output terminal Not used (open)
29	DATA	O	Serial data output terminal to the CXD2519Q (IC103) in CD section
30	CLK	O	Clock signal output terminal to the CXD2519Q (IC103) in CD section
31	$\overline{\text{XLT}}$	O	Serial latch pulse signal output terminal to the CXD2519Q (IC103) in CD section
32	BUSCLK	I	Clock signal input terminal from the system controller (IC400) and master controller (IC500)
33 to 36	BUSD0 to BUSD3	I/O	Two way data bus to the system controller (IC400) and master controller (IC500)
37	VDD	—	Power supply terminal (+5V)
38	X2	O	Main system clock output terminal (12.5MHz)
39	X1	I	Main system clock input terminal (12.5MHz)
40	VSS	—	Ground terminal
41	XT2	O	Sub system clock output terminal Not used (open)
42	XT1	I	Sub system clock input terminal Not used (fixed at “L”)
43	$\overline{\text{RESET}}$	I	Reset signal input terminal “L”: reset This set uses voltage down detection signal
44	BUSCLK	O	Clock signal output terminal to the system controller (IC400) and master controller (IC500)
45	$\overline{\text{BUSBSY}}$	I	Busy signal input terminal from the master controller (IC500)
46	SCOR	I	Subcode sync (S0+S1) detection signal input terminal from CXD2519Q (IC103) in CD section
47	DQSY	I	Data read standby signal input terminal from the CD text decoder (IC104)
48	—	O	Not used (open)
49, 50	JOG0, JOG1	I	JOG dial pulse input terminal Not used (fixed at “L”)
51	AVDD	—	Power supply terminal (+5V) (for A/D converter section, analog system)

Pin No.	Pin Name	I/O	Function
52	AVREF0	I	Reference voltage (+5V) input terminal (for D/A converter)
53 to 55	KEY0 to KEY2	I	KEY input terminal Not used (fixed at "L")
56	SELECT0	I	Input terminal for Japanese letter input function setting "L": input possible (fixed at "H" in this set)
57	SELECT1	I	Input terminal for separate/complete type setting of CD section and other sections "H": complete type, "L": separate type (fixed at "H" in this set)
58	DISC SENSOR	I	Detection input from the disc in detect sensor (Q501) "H": disc in
59	MID SENSOR	I	Detection input from the tray close detect sensor (IC501) "H": tray closed
60	—————	I	Not used (fixed at "L")
61	AVSS	—	Ground terminal (for A/D converter)
62	TEST	I	Test input terminal (fixed at "L" in this set)
63	—————	O	Not used (open)
64	AVREF0	I	Reference voltage (+5V) input terminal (for D/A converter)
65	SRDT	I	Serial data input terminal from the CD text decoder (IC104)
66	—————	O	Not used (open)
67	SCLK	O	Clock signal output terminal to the CD text decoder (IC104)
68	SUBQ	I	Subcode Q data input from the CXD2519Q (IC103) in CD section
69	—————	O	Not used (open)
70	SQCLK	O	Clock signal output terminal to the CXD2519Q (IC103) in CD section
71	XMODE	O	Reset/power down mode setting output terminal to the CD text decoder (IC104)
72	SENSE2	I	Monitor input from the CXA1992AR (IC101) inside status
73	SENSE	I	Monitor input from the CXD2519Q (IC103) inside status
74	DRV DAT	O	Serial data output terminal to display Not used (open)
75	DRV CLK	O	Clock signal output terminal to display Not used (open)
76 to 83	A0 to A7	O	Address signal output terminal to the S-RAM (IC601)
84 to 91	D0 to D7	I/O	Two way data bus to the S-RAM (IC601)
92 to 98	A8 to A14	O	Address signal output terminal to the S-RAM (IC601)
99	A15	O	Address signal output terminal to external device Not used (open)
100	VSS	—	Ground terminal

*1 CD loading motor (M502) control

Operation Terminal	IN	OUT	BRAKE	RUN IDLE
LD IN (pin ⑮)	"L"	"H"	"H"	"L"
LD OUT (pin ⑭)	"H"	"L"	"H"	"L"

*2 CD elevator UP/DOWN motor (M501) control

Operation Terminal	UP	DOWN	BRAKE	RUN IDLE
STKUP (pin ⑰)	"L"	"H"	"H"	"L"
STKDOWN (pin ⑱)	"H"	"L"	"H"	"L"

• MAIN BOARD IC400 μ PD780016YGF-021-3BA (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Function
1 to 8	—	O	Not used (open)
9	VPP	—	Ground terminal
10	X2	O	Main system clock output terminal (5 MHz)
11	X1	I	Main system clock input terminal (5 MHz)
12	VDD (B/U)	—	Power supply terminal (+5V) (for back up)
13	XT2	O	Sub system clock output terminal (32.768 kHz)
14	XT1	I	Sub system clock input terminal (32.768 kHz)
15	RESET	I	System reset signal input terminal from the reset signal generator (IC401) For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
16	AUB-IN	I	Audio bus signal input terminal
17	AUB-OUT	O	Audio bus signal output terminal
18	YBCLK0	O	Clock signal output terminal to the master controller (IC500) and CD mechanism controller (IC600)
19	YBCLKI	I	Clock signal input terminal to the master controller (IC500) and CD mechanism controller (IC600)
20	YBUS BSY	I	Busy signal input from the master controller (IC500)
21	RDS CLK	I	Clock signal input from the RDS decoder (IC361) (AEP, UK, German, North European models only)
22	RDS DATA	I	Serial data input from the RDS decoder (IC361) (AEP, UK, German, North European models only)
23	VDD (B/U)	—	Power supply terminal (+5V) (for back up)
24	AVREF	I	Reference voltage (+5V) input terminal (for A/D converter)
25	KEY0	I	Key input terminal DIMMER key input (S701)
26	KEY1	I	Key input terminal POWER, GROOVE, DBFB key input (S700, 703, 704)
27	KEY2	I	Key input terminal CD1 to 3 ▲, MD ▲ key input (S705 to 707, 780)
28 to 31	—	—	Not used (fixed at "L")
32	AC CUT	I	Power down detection input terminal "L": power down
33	AVSS	—	Ground terminal (for A/D converter)
34	—	O	Not used (open)
35	FL-DATA	O	Serial data output to the fluorescent indicator tube driver (IC700)
36	FL-CLK	O	Clock signal output to the fluorescent indicator tube driver (IC700)
37	FL-CS	O	Chip select signal output to the fluorescent indicator tube driver (IC700)
38	AC ON	O	Reset signal output to the fluorescent indicator tube driver (IC700) and LED driver (IC701) "L": reset
39	—	O	Not used (open)
40	VSS	—	Ground terminal
41	ISIRCS	I	Remote commander signal input from the SIRCS/infrared remote control select switch (IC703)
42	WSIRCS	I	Wired SIRCS signal input from detachable controller (RM-MD515)
43	LED LAT	O	Serial data latch pulse signal output to the LED driver (IC701)
44	LED DATA	O	Serial data output to the LED driver (IC701)
45	LED CLK	O	Clock data output to the LED driver (IC701)
46	427 LAT	O	Serial data latch pulse signal output to the M62427FP-A (IC111)
47	427 DATA	O	Serial data output to the M62427FP-A (IC111)
48	427 CLK	O	Clock signal output to the M62427FP-A (IC111)
49	4052 INH	O	INH output to the function switch (IC100)
50, 51	—	O	Not used (open)
52	—	I	Not used (fixed at "L")
53, 54	—	O	Not used (open)
55, 56	N-CH O/D	I	Not used (fixed at "L")
57 to 60	SUFFIX	I	Input terminal for the set model setting *1
61 to 64	—	I	Not used (fixed at "L")
65	EWS IN	I	Monitor input from external device Not used (fixed at "H")

Pin No.	Pin Name	I/O	Function
66	EWS OUT	O	Standby signal output to external device Not used (open)
67	STBY	I	Not used (fixed at “H”)
68	EWS WARN	I	Not used (fixed at “H”)
69	EWS TEST	I	Not used (fixed at “H”)
70		O	Not used (open)
71	VSS	—	Ground terminal
72, 73		O	Not used (open)
74	RELAY ON	O	Control signal output for speaker protect relay drive “L”: relay ON
75	STK MUTE	O	Mute control signal output terminal for speaker “H”: mute ON
76	DBFB HIGH	O	DBFB control signal output to the M62427FP-A (IC111) “L”: DBFB HIGH, “H”: DBFB NORM/OFF
77	POWER ON	O	Power ON/OFF control signal output for audio section “L”: power ON, “H”: standby
78	POWER ON	O	Power ON/OFF control signal output terminal Not used (open)
79	TA MUTE	O	Line mute control signal output “L”: mute ON
80, 81		—	Not used (open)
82 to 85	BUSD0 to BUSD3	I/O	Two way data bus to the master controller (IC500) and CD mechanism controller (IC600)
86 to 90		O	Not used (open)
91	PCL OUT	O	Not used (open)
92	SOFT TEST	O	Not used (open)
93	ST-CLK	O	Clock signal output to PLL circuit in the tuner unit
94	ST-DIN	I	Serial data input from PLL circuit in the tuner unit
95	ST-DOUT	O	Serial data output to PLL circuit in the tuner unit
96	ST-CE	O	Chip enable signal output to PLL circuit in the tuner unit
97	TUNED	I	Tuning indication signal input from the tuner unit
98	STEREO	I	Stereo indication signal input from the tuner unit
99	ST MUTE	O	Mute control signal output to the tuner unit
100		O	Not used (open)

*1 The set model setting

Model Terminal	US	AEP, UK, German, North European	Malaysia, Singapore, Hong Kong	Tourist
SUFFIX (pin ⑤7)	“L”	open	“L”	open
SUFFIX (pin ⑤8)	open	“L”	“L”	“L”
SUFFIX (pin ⑤9)	open	“L”	“L”	open
SUFFIX (pin ⑥0)	open	open	“L”	“L”

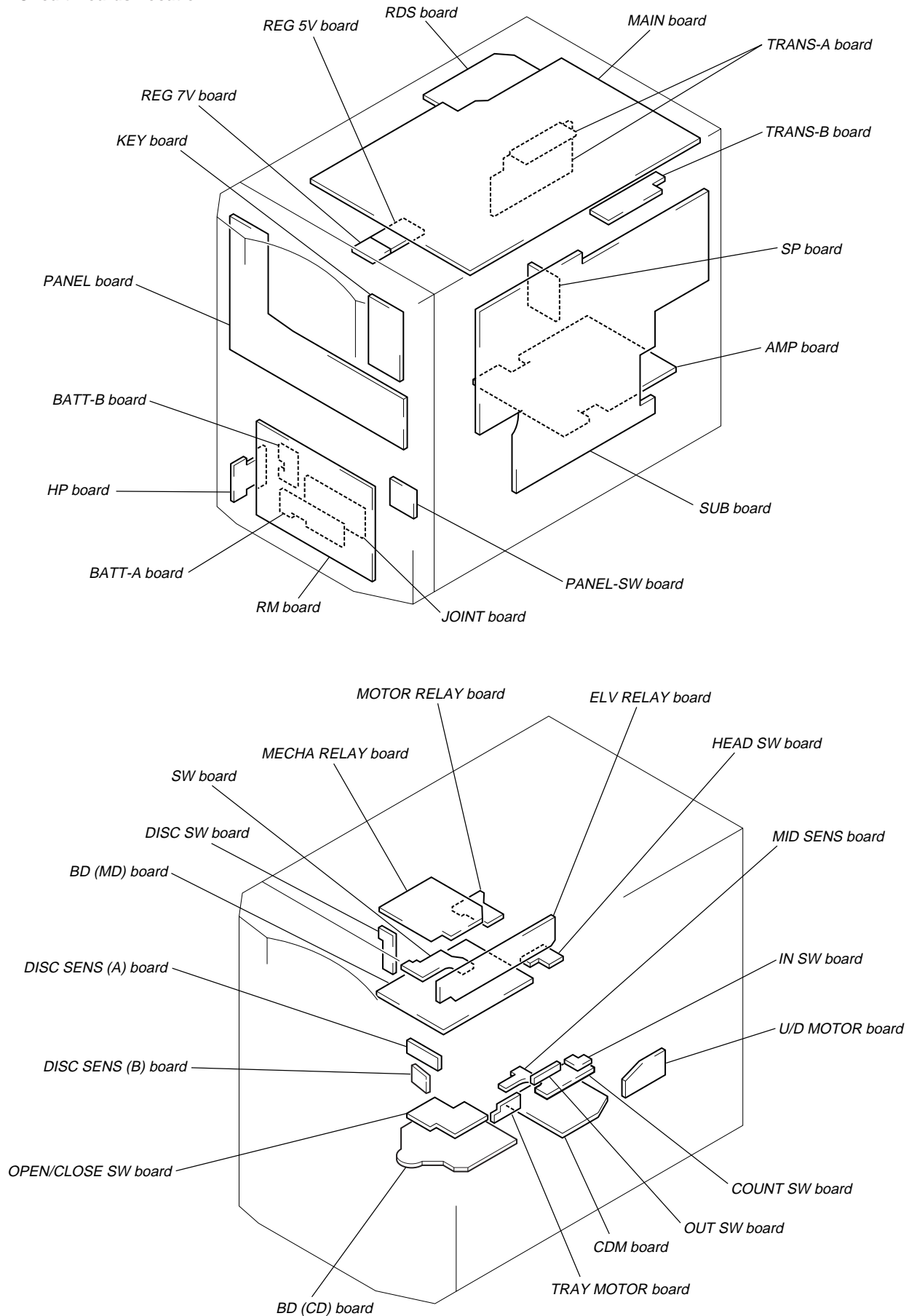
• RM BOARD IC1 MB89191PF-195 (KEY CONTROLLER)

Pin No.	Pin Name	I/O	Function
1 to 3	IN4 to IN6	I	Key input terminal "L": active *1
4	EXT	I	Detection input from power source (HCD-MD515/dry battery) "H": HCD-MD515, "L": dry battery Fix at "H" to the LED OUT (pin ⑩) when "H"
5	—	I	Not used (fixed at "L")
6	RESET	I	Reset signal input from external circuit when the EXT (pin ④) status changed
7	XO	O	Main system clock output terminal (3 MHz)
8	XI	I	Main system clock input terminal (3 MHz)
9	VSS	—	Ground terminal
10	LED OUT	O	SIRCS signal output to the infrared emitter (D1) "L": active Fixed at "H" when the EXT (pin ④) is "H"
11	SIRCS	O	Wired SIRCS signal output to the HCD-MD515 "L": active
12	VOL A	I	JOG dial pulse input from rotary encoder (RV2)
13	JOG A	I	JOG dial pulse input from rotary encoder (RV1)
14	VOL B	I	JOG dial pulse input from rotary encoder (RV2)
15	JOG B	I	JOG dial pulse input from rotary encoder (RV1)
16, 17	—	I	Not used (fixed at "L")
18 to 21	OUT0 to OUT3	O	Key output terminal "L": active *1
22, 23	—	I	Not used (fixed at "L")
24 to 27	IN0 to IN3	I	Key input terminal "L": active *1
28	VCC	—	Power supply terminal (+2.4V)

*1 Key matrix

	OUT 0 (pin⑱)	OUT 1 (pin⑲)	OUT 2 (pin⑳)	OUT 3 (pin㉑)
IN 0 (pin㉔)	REC/CD-MD SYNC	REC IT	DISC SKIP	CD LOOP
IN 1 (pin㉕)	◀◀	▶▶	—	MD/CD 3
IN 2 (pin㉖)	EDIT/NO	ENTER/YES	TAPE	MD
IN 3 (pin㉗)	POWER	PRESET EQ	TIMER SET	TIMER SELECT
IN 4 (pin①)	■	▶	MD/CD 2	MD/CD 1
IN 5 (pin②)	DISP	FUNCTION	BAND, TUNER	CD
IN 6 (pin③)	STEREO/MONO REPEAT	PRESET PROGRAM	AUTO SHUFFLE	MANUAL CONTINUE

• Circuit Boards Location



SECTION 7 EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.

- Color Indication of Appearance Parts

Example:

KNOB, BALANCE (WHITE) . . . (RED)

↑ ↑
Parts Color Cabinet's Color

- Abbreviation

AED : North European JE : Tourist

G : German MY : Malaysia

HK : Hong Kong SP : Singapore

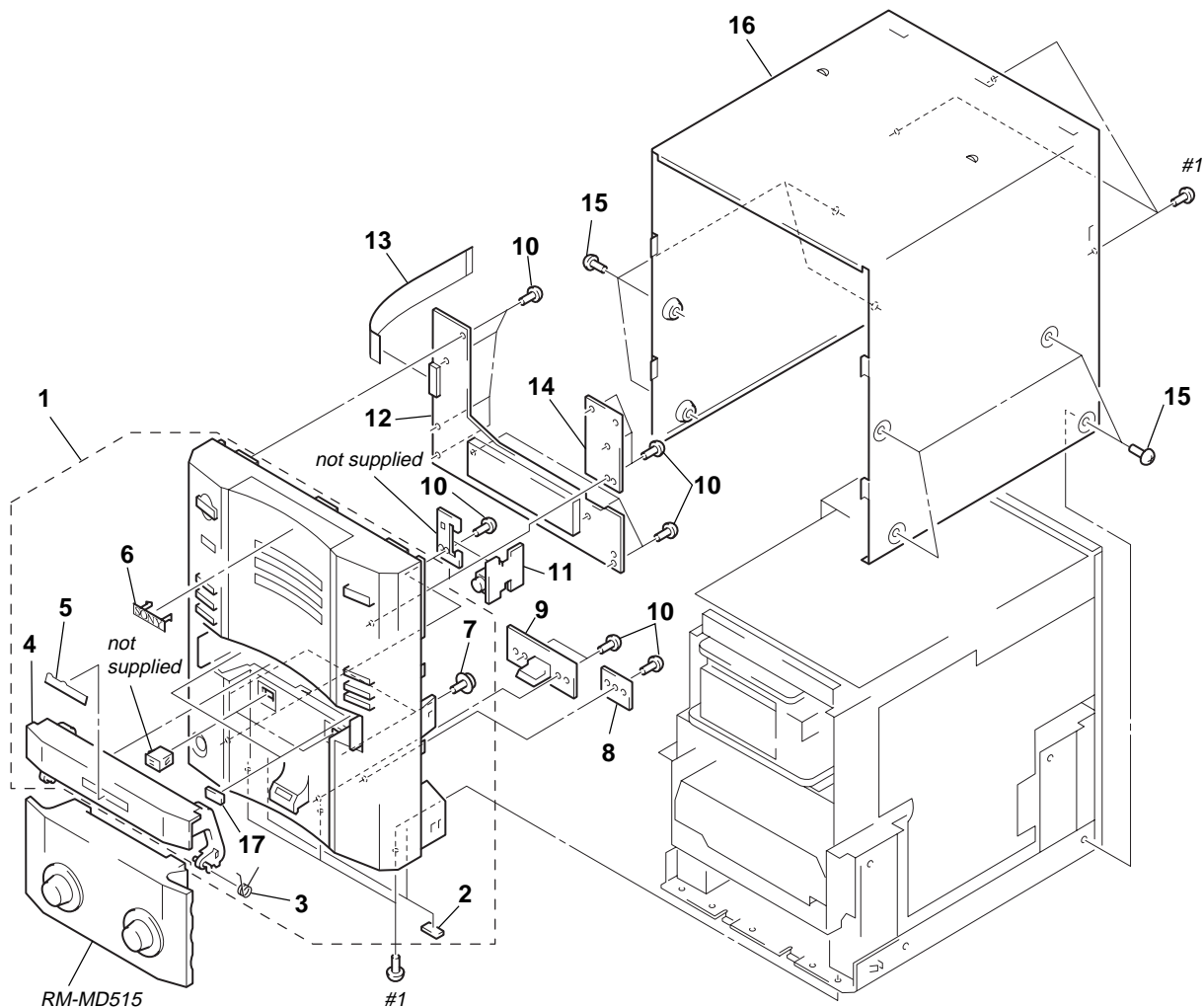
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.

- Hardware (# mark) list is given in the last of the electrical parts list.

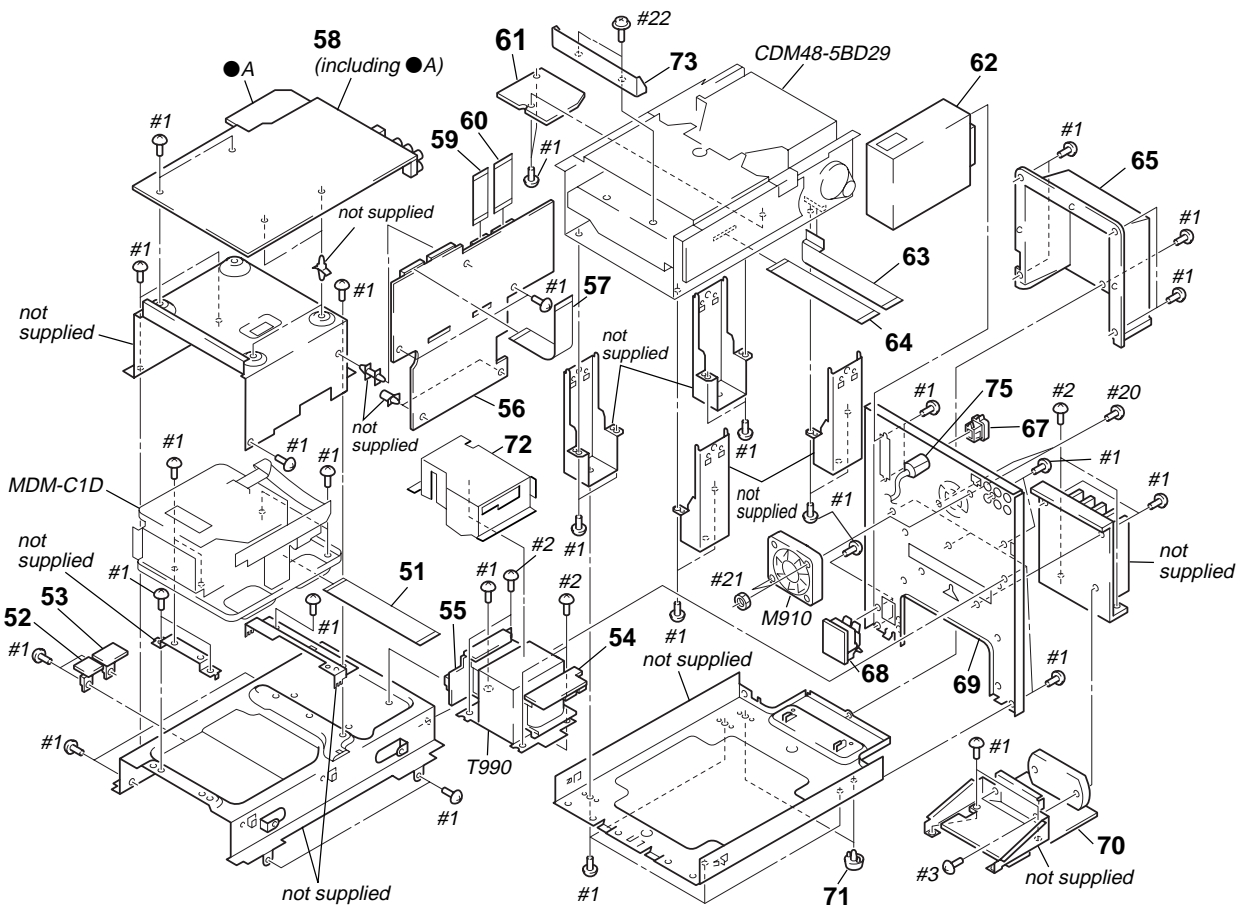
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

(1) CASE, FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-4948-949-1	PANEL ASSY, FRONT (US, MY, SP, HK, JE)		* 9	1-667-075-11	JOINT BOARD	
1	X-4949-305-1	PANEL ASSY, FRONT (AEP, UK, G, AED)		10	4-951-620-01	SCREW (2.6X8), +BVTP	
* 2	4-930-336-71	FOOT (FELT)		* 11	1-667-073-11	HP BOARD	
3	4-993-618-01	SPRING (CD), TORSION		* 12	A-4403-366-A	PANEL BOARD, COMPLETE	
4	4-993-606-01	LID (CD)		13	1-773-116-11	WIRE (FLAT TYPE) (19 CORE) (170 mm)	
5	4-993-616-01	EMBLEM (CD)		* 14	1-667-070-11	KEY BOARD	
6	4-962-708-01	EMBLEM (4-A), SONY		15	3-363-099-11	SCREW (CASE 3 TP2)	
7	4-933-134-11	SCREW (+PTPWH M2.6X8)		* 16	4-993-622-11	CASE	
* 8	1-667-076-11	PANEL-SW BOARD		17	4-993-617-01	CUSHION (CD)	

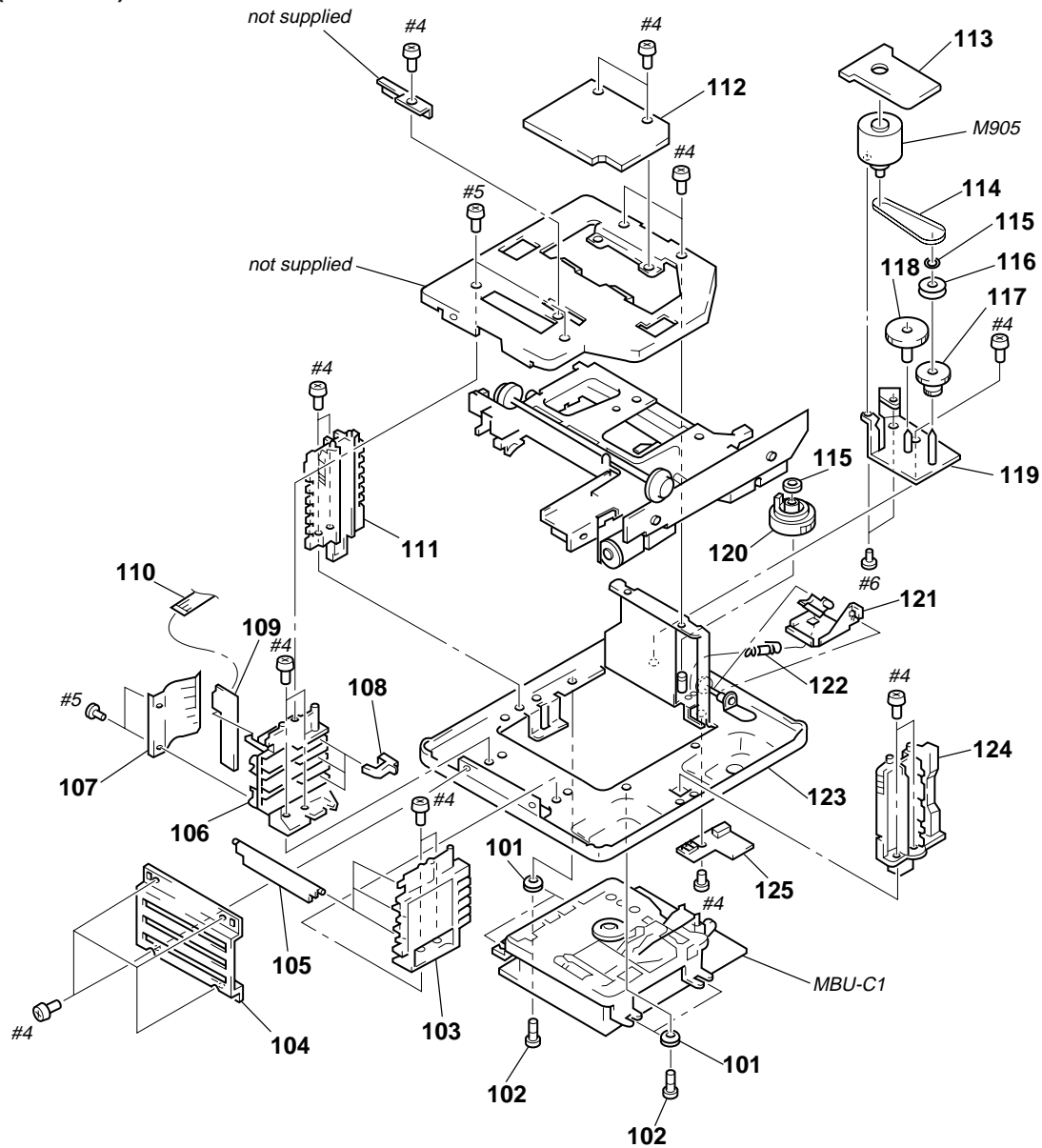
- A: RDS board



The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

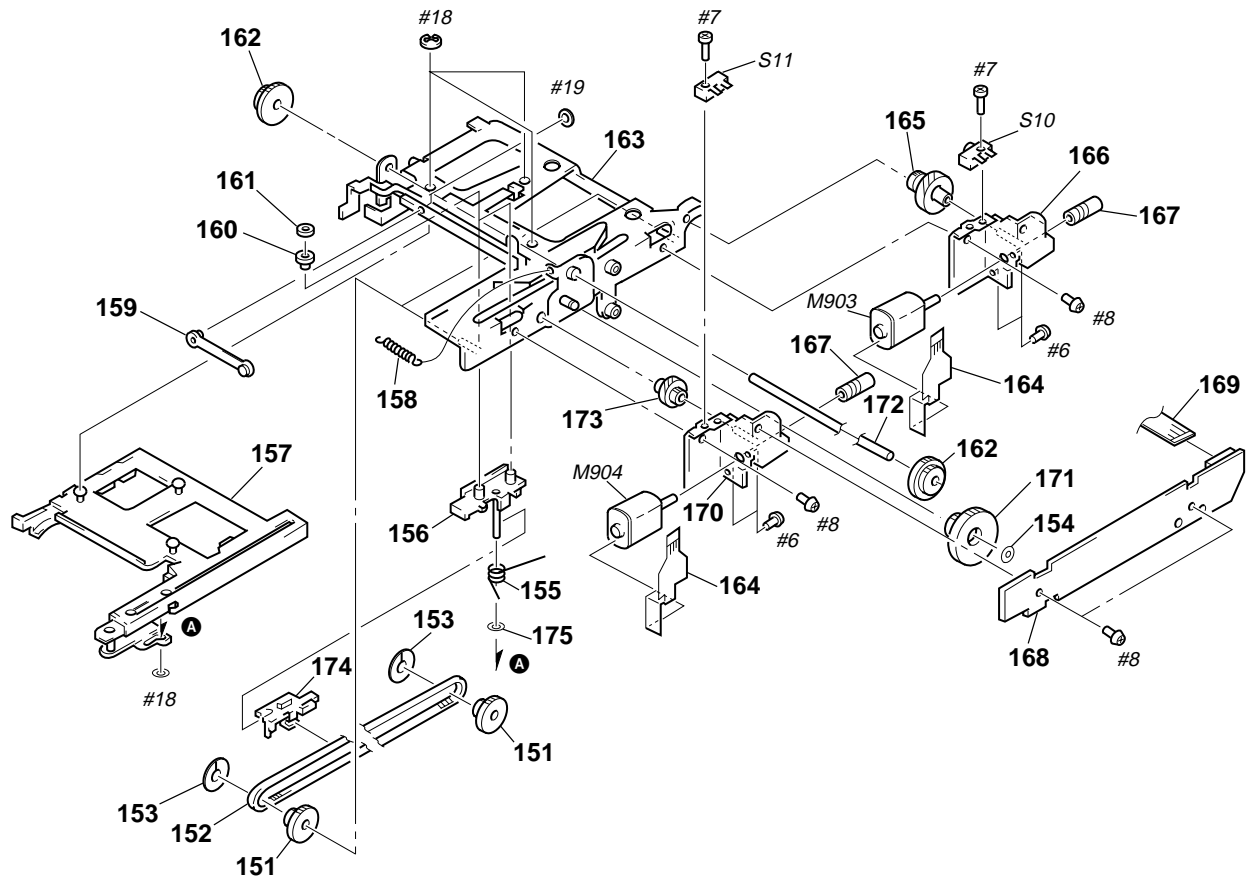
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	1-782-938-11	WIRE (FLAT TYPE) (23 CORE) (200 mm)		Δ 66	1-575-042-21	CORD, POWER (US)	
* 52	1-667-072-11	REG 7V BOARD		Δ 66	1-575-651-21	CORD, POWER (AEP, G, AED, MY, SP, HK)	
* 53	1-667-071-11	REG 5V BOARD		Δ 66	1-696-571-11	CORD, POWER (UK)	
* 54	1-667-080-11	TRANS-B BOARD		67	3-703-244-00	BUSHING (2104), CORD (EXCEPT US)	
* 55	1-667-079-11	TRANS-A BOARD		* 67	3-703-571-11	BUSHING (S) (4516), CORD (US)	
* 56	A-4403-375-A	SUB BOARD, COMPLETE (EXCEPT US)		* 68	1-667-081-11	SP BOARD	
* 56	A-4403-376-A	SUB BOARD, COMPLETE (US)		* 69	4-993-619-11	PANEL, BACK (AEP, UK, G, AED)	
57	1-782-937-11	WIRE (FLAT TYPE) (17 CORE) (130 mm)		* 69	4-993-619-21	PANEL, BACK (MY, SP)	
* 58	A-4403-362-A	MAIN BOARD, COMPLETE (AEP, UK, G, AED)		* 69	4-993-619-31	PANEL, BACK (HK)	
* 58	A-4403-363-A	MAIN BOARD, COMPLETE (MY, SP, HK)		* 69	4-993-619-41	PANEL, BACK (US)	
* 58	A-4403-364-A	MAIN BOARD, COMPLETE (US)		* 69	4-993-619-61	PANEL, BACK (JE)	
* 58	A-4407-369-A	MAIN BOARD, COMPLETE (JE)		* 70	A-4403-378-A	AMP BOARD, COMPLETE (EXCEPT US)	
59	1-769-937-11	WIRE (FLAT TYPE) (11 CORE)		* 70	A-4403-379-A	AMP BOARD, COMPLETE (US)	
60	1-773-105-11	WIRE (FLAT TYPE) (19 CORE) (70 mm)		71	4-993-867-01	FOOT (8)	
* 61	1-667-082-11	CDM BOARD		* 72	4-997-129-01	COVER (TRANS)	
62	1-233-544-21	ENCAPSULATED COMPONENT (FM/AM TUNER UNIT) (US)		* 73	4-996-281-01	PLATE (CDM), ORNAMENTAL	
62	1-233-546-21	ENCAPSULATED COMPONENT (FM/AM TUNER UNIT) (MY, SP, HK, JE)		Δ 74	1-569-007-11	ADAPTOR, CONVERSION 2P (JE)	
62	1-693-387-21	TUNER (FM/MW/LW) (AEP, UK, G, AED)		Δ 74	1-569-008-11	ADAPTOR, CONVERSION 2P (MY, SP)	
63	1-782-940-11	WIRE (FLAT TYPE) (17 CORE) (200 mm)		Δ 74	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (HK)	
64	1-782-941-11	WIRE (FLAT TYPE) (23 CORE) (230 mm)		75	1-543-798-11	FILTER, CLAMP (FERRITE CORE)	
* 65	4-993-620-01	COVER (BACK)		M910	1-698-997-11	FAN, DC	
Δ 66	1-558-943-41	CORD, POWER (JE)		Δ T990	1-431-513-11	TRANSFORMER, POWER (AEP, UK, G, AED)	
				Δ T990	1-431-514-11	TRANSFORMER, POWER (US)	
				Δ T990	1-431-515-11	TRANSFORMER, POWER (MY, SP, HK, JE)	

**(3) MD MECHANISM DECK SECTION-1
(MDM-C1D)**



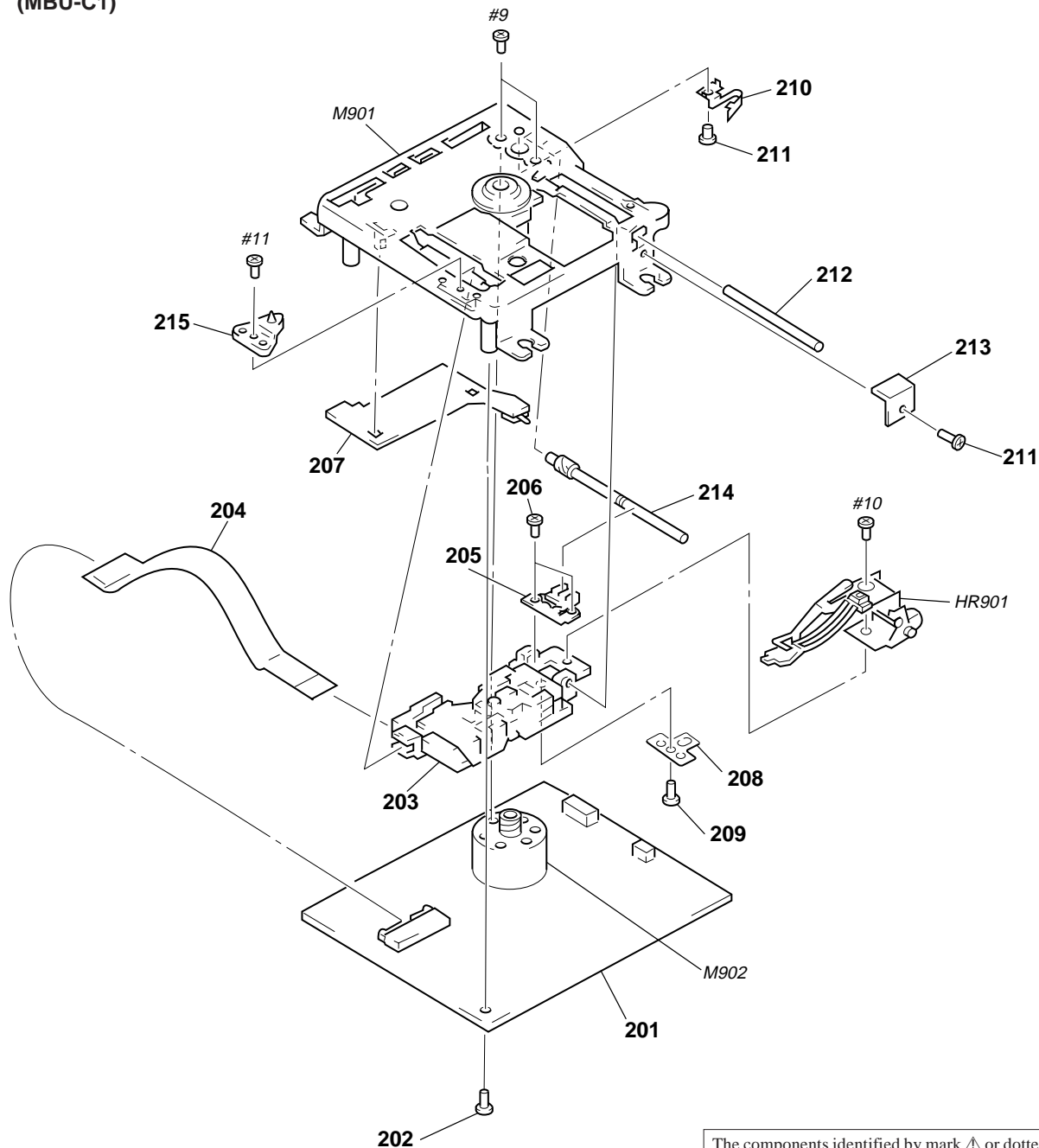
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
101	4-987-327-01	INSULATOR		114	3-661-080-00	BELT, (A)	
102	4-987-240-01	SCREW, STEP		115	3-701-438-21	WASHER (E-2.3), NYLON	
* 103	4-994-631-01	HOLDER (RN)		116	3-018-636-01	GEAR (PULLEY) (C)	
* 104	4-994-633-01	HOLDER (FN)		117	3-018-203-01	GEAR (HEAD) (A)	
105	4-994-629-01	DOOR		118	3-018-204-01	GEAR (HEAD) (B)	
106	4-994-632-01	HOLDER (LN)		119	X-3374-348-1	CHASSIS (HEAD GEAR) ASSY	
107	4-986-934-01	SPRING (LOCK), LEAF		120	4-987-242-01	GEAR (CAM)	
* 108	4-995-805-01	LOCK (N)		* 121	4-987-241-01	LEVER (H)	
* 109	1-667-393-11	DISC SW BOARD		122	4-987-239-01	SPRING (3), TENSION	
110	1-782-910-11	WIRE (FLAT TYPE) (7 CORE)		123	X-4947-927-1	CHASSIS (BASE) ASSY	
111	4-988-375-01	RACK (L)		124	4-994-630-01	RACK (RN)	
* 112	1-667-396-11	MECHA RELAY BOARD		* 125	1-667-395-11	HEAD SW BOARD	
* 113	1-667-633-11	MOTOR RELAY BOARD		M905	X-4949-160-1	MOTOR (HEAD) ASSY	
							(OVER WRITE HEAD UP/DOWN)

**(4) MD MECHANISM DECK SECTION-2
(MDM-C1D)**



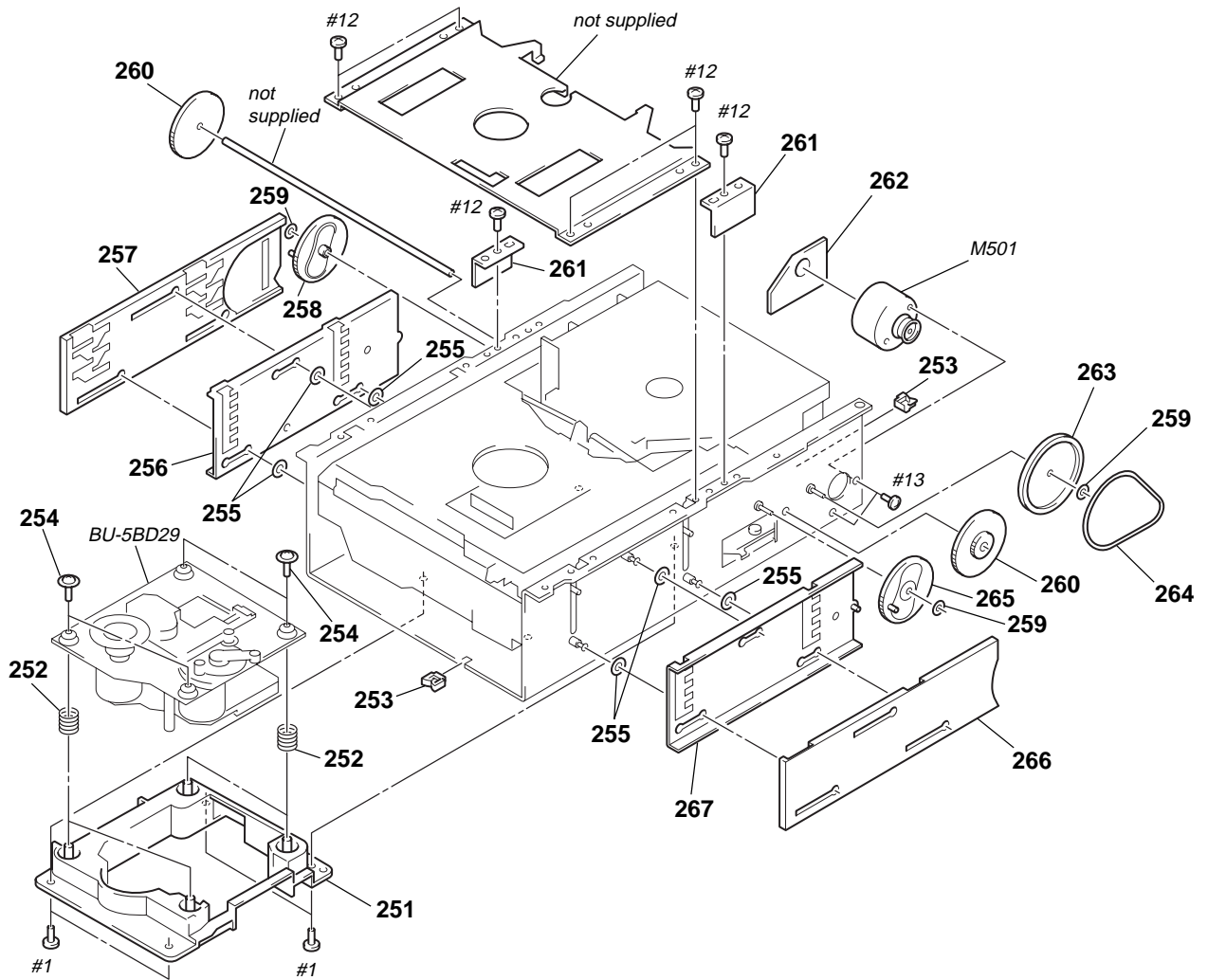
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
151	4-986-951-01	GEAR (4)		166	X-4949-225-1	BRACKET (1BN) ASSY	
152	4-987-243-01	BELT		167	4-986-953-01	WORM	
153	4-986-947-01	STOPPER		* 168	1-667-394-11	ELV RELAY BOARD	
154	3-701-438-21	WASHER (E-2.3), NYLON		169	1-782-909-11	WIRE (FLAT TYPE) (13 CORE)	
155	4-987-236-01	SPRING, TORSION		170	X-4947-928-1	BRACKET (1A) ASSY	
156	X-4947-932-1	SLIDER (2) ASSY		171	4-986-950-01	GEAR (3)	
157	X-3374-359-1	HOLDER (1H) ASSY		172	4-987-244-01	SHAFT (1)	
158	4-987-238-01	SPRING (2), TENSION		173	4-986-949-01	GEAR (2)	
159	X-4948-193-1	LEVER (S) ASSY		174	4-987-235-02	CLAMPER (B)	
160	4-987-111-01	ROLLER (2)		175	3-326-162-02	WASHER, POLYETHYLENE	
161	3-307-948-11	WASHER, NYLON		M903	1-698-874-11	MOTOR, DC (LOADING)	
162	4-986-952-01	GEAR (5)		M904	1-698-874-11	MOTOR, DC (ELEVATOR UP/DOWN)	
163	X-4949-171-1	CHASSIS (ELEVATOR) (NEW) ASSY		S10	1-762-904-11	SWITCH, PUSH (1 KEY) (LOADING IN DETECT)	
164	1-667-955-11	FLEXIBLE BOARD		S11	1-762-952-11	SWITCH, PUSH (1 KEY)	
165	4-986-948-01	GEAR (1)				(LOADING OUT DETECT)	

(5) MD BASE UNIT SECTION
(MBU-C1)



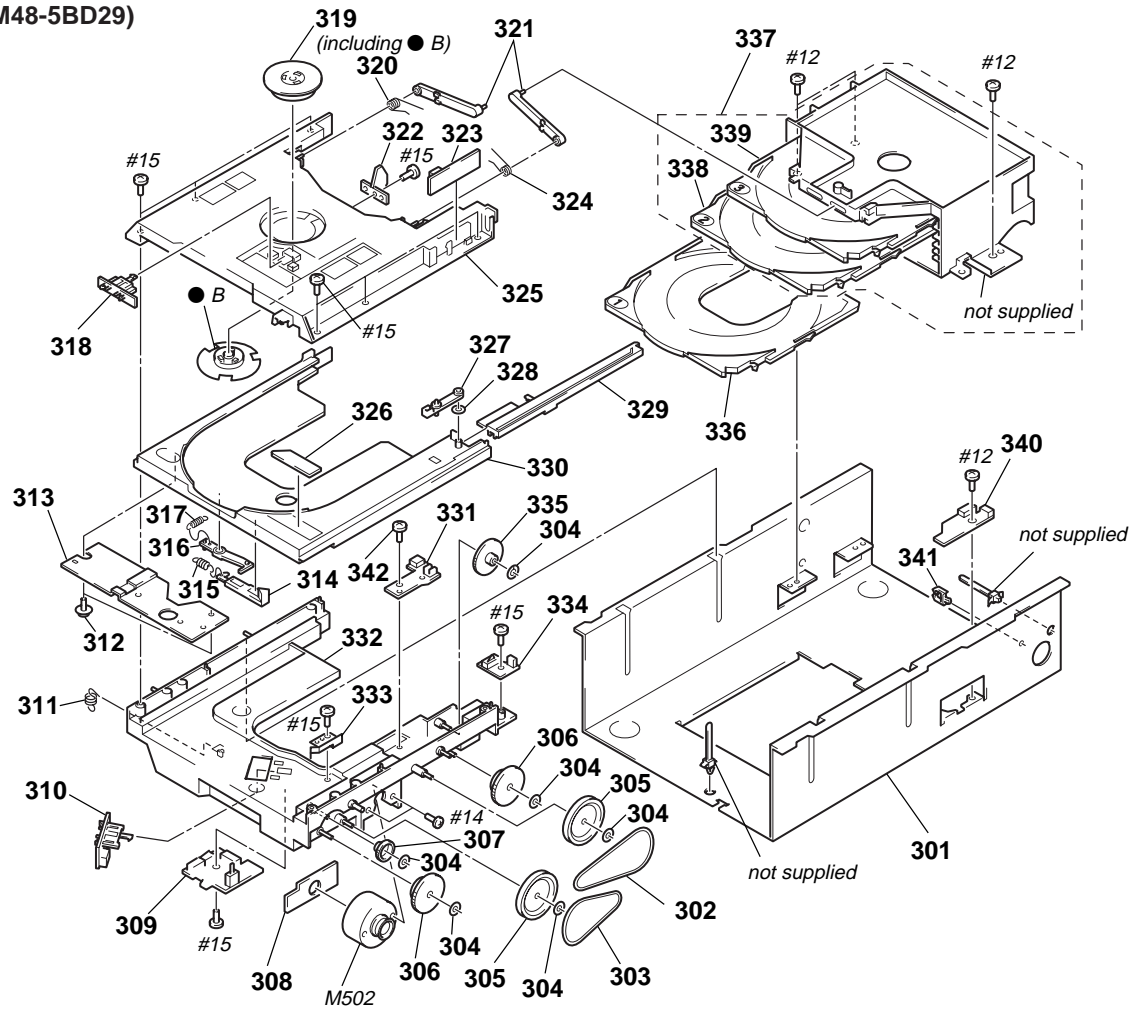
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 201	A-4699-823-A	BD (MD) BOARD, COMPLETE		210	4-979-906-11	SPRING (LEAD SCREW)	
202	3-348-383-01	SCREW (M2X6.0), +B TAPPING		211	3-342-375-11	SCREW (M1.7X1.4), SPECIAL	
Δ 203	8-583-028-02	OPTICAL PICK-UP KMS-260A/J1N (for MD)		* 212	4-988-702-01	SHAFT (MAIN)	
204	1-664-039-11	OP TRANSLATION FLEXIBLE BOARD		* 213	4-988-484-01	STOPPER	
205	4-963-914-02	RACK (INSERTER)		214	A-3304-200-A	SCREW ASSY, LEAD	
206	3-366-890-11	SCREW (M1.4)		* 215	4-983-511-02	PIN (OUTSERT)	
* 207	1-667-392-11	SW BOARD		HR901	1-500-489-11	HEAD, OVER WRITE	
208	4-987-061-01	SPACER (RACK)		M901	A-4672-241-A	MOTOR ASSY, SPINDLE	
209	4-955-841-11	SCREW		M902	A-4672-240-A	MOTOR ASSY, SLED	

(6) CD MECHANISM DECK SECTION-1
(CDM48-5BD29)



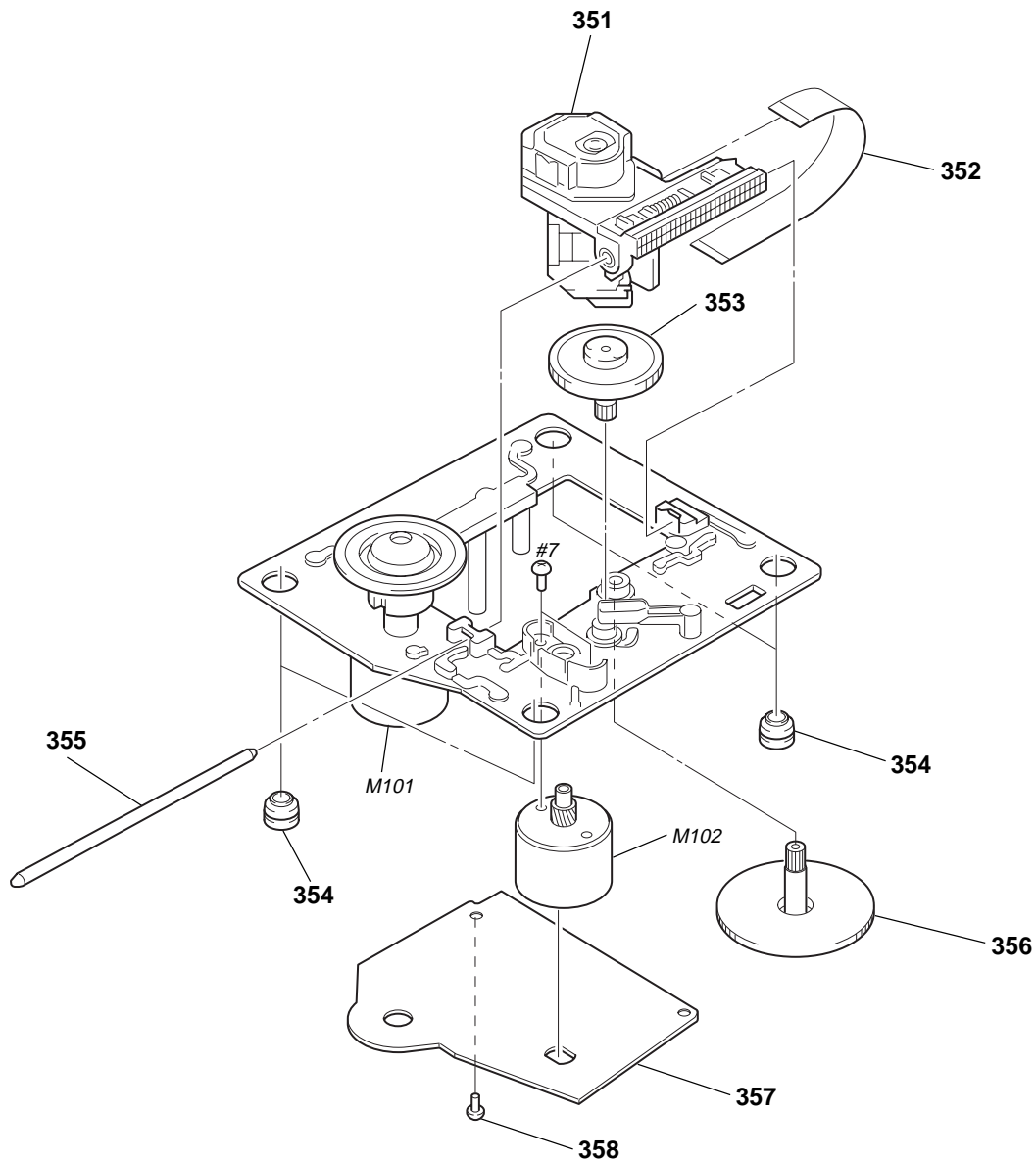
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 251	4-993-146-01	HOLDER, BU		260	4-964-466-01	GEAR (JOINT)	
252	4-948-503-01	SPRING (BU), COMPRESSION		* 261	4-967-875-01	REINFORCEMENT (PLATE CAM)	
253	3-383-699-01	CLAMP (EDGE)		* 262	1-651-396-11	U/D MOTOR BOARD	
254	4-985-672-01	SCREW (+PTPWHM2.6), FLOATING		263	4-964-487-01	PULLEY (U/D)	
255	4-965-882-01	SPACER		264	4-996-408-01	BELT (U/D)	
256	X-4948-778-1	SLIDER (DRIVING CAM L) ASSY		265	4-964-467-01	GEAR (CAM R)	
* 257	4-993-104-01	CAM (L), PLATE		* 266	4-993-105-01	CAM (R), PLATE	
258	4-964-468-01	GEAR (CAM L)		267	X-4948-779-1	SLIDER (DRIVING CAM R) ASSY	
259	4-957-798-01	WASHER, STOPPER		M501	X-4949-299-1	MOTOR ASSY (CDM48 U/D)	
							(ELEVATOR UP/DOWN)

(7) CD MECHANISM DECK SECTION-2
(CDM48-5BD29)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 301	X-4948-784-1	CHASSIS ASSY, SUB		* 323	1-651-392-11	OUT SW BOARD	
302	4-964-476-01	BELT (R)		324	4-964-484-01	SPRING (LEVER R), TORSION	
303	3-319-030-01	BELT (MIDWAY)		325	4-964-492-01	BASE (MAGNET), FITTING	
304	4-957-798-01	WASHER, STOPPER		326	4-972-864-11	EMBLEM (MAIN TRAY)	
305	4-964-465-01	PULLEY (TRAY)		327	X-4944-659-1	LEVER (GOOSENECK) ASSY	
306	4-964-464-01	GEAR (DECELERATION)		328	3-701-439-21	WASHER	
307	4-964-462-01	GEAR (TRAY F)		329	4-964-455-01	SLIDER (SELECTION)	
* 308	1-651-391-11	TRAY MOTOR BOARD		330	4-964-453-01	TRAY (MAIN)	
* 309	1-651-394-11	OPEN/CLOSE SW BOARD		* 331	1-651-393-11	MID SENS BOARD	
* 310	1-651-399-11	DISC SENS (B) BOARD		332	X-4944-557-1	BASE (TRAY) ASSY, FITTING	
311	4-996-098-01	SPRING (L), TENSION		333	4-967-196-01	SPRING (CLICK), LEAF	
312	4-933-134-01	SCREW (+PTW M2.6X6)		* 334	1-651-395-11	IN SW BOARD	
* 313	4-964-473-02	BRACKET (LEVER RETAINER)		335	4-964-463-01	GEAR (TRAY R)	
314	4-964-458-01	SLIDER (CLICK)		336	X-4944-823-1	TRAY (SUB NO.1) ASSY	
315	4-964-481-01	SPRING (A), TENSION		337	A-4672-428-A	STOCKER ASSY	
316	4-964-459-01	LEVER (STOPPER)		338	X-4944-824-1	TRAY (SUB NO.2) ASSY	
317	4-964-482-01	SPRING (B), TENSION		339	X-4944-825-1	TRAY (SUB NO.3) ASSY	
* 318	1-651-398-11	DISC SENS (A) BOARD		* 340	1-651-397-11	COUNT SW BOARD	
319	1-452-719-11	MAGNET ASSY		341	4-962-113-01	CLAMP	
320	4-964-485-01	SPRING (LEVER L), TORSION		342	4-951-620-01	SCREW (2.6X8), +BVTP	
* 321	4-964-460-01	LEVER (STOCK)		M502	X-4944-463-1	MOTOR ASSY (LOADING)	
322	4-993-145-01	STOPPER					

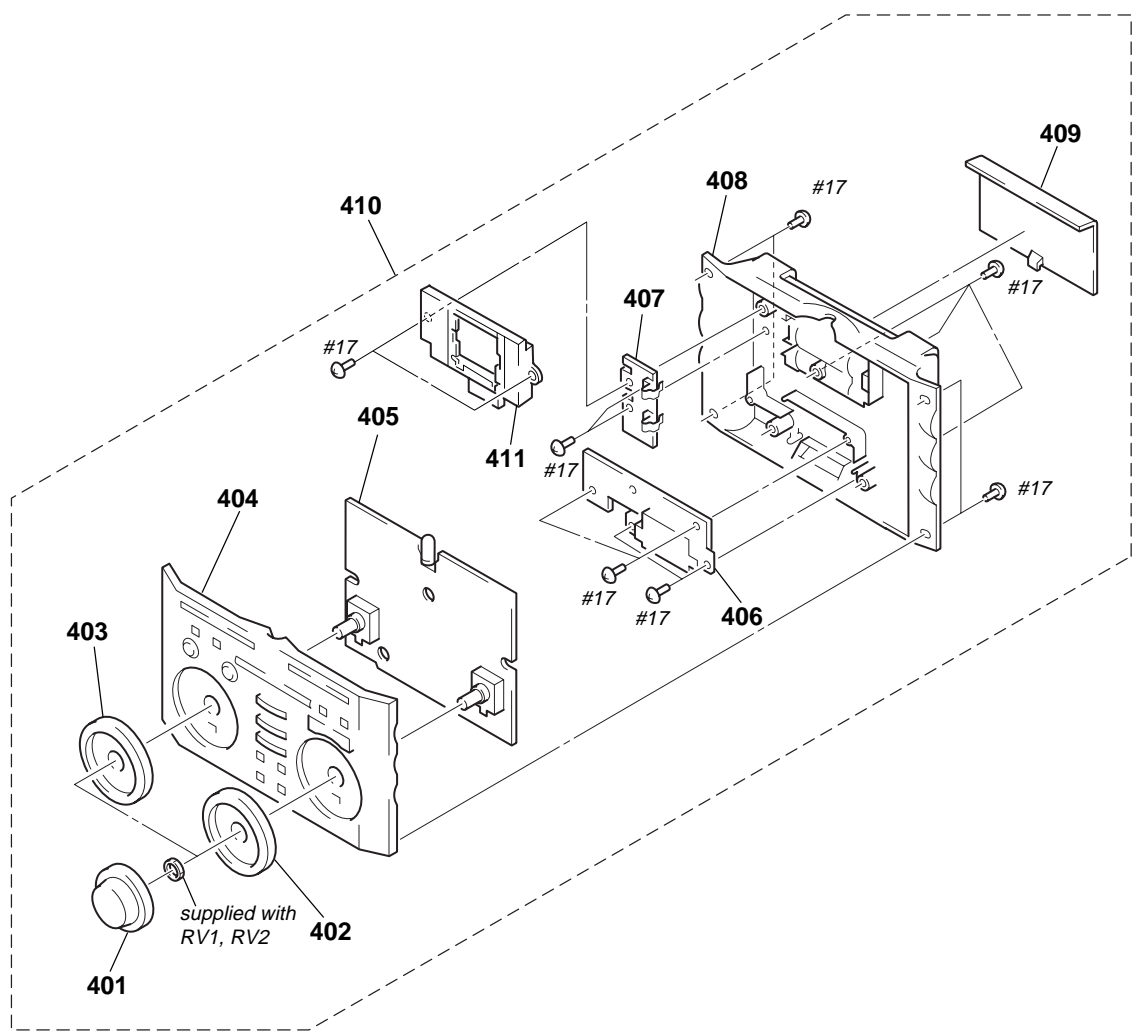
(8) CD BASE UNIT SECTION
(BU-5BD29)



The components identified by mark \triangle or dotted line with mark \triangle are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
\triangle 351	8-848-379-31	OPTICAL PICK-UP KSS-213BA/F-NP (for CD)		356	4-917-564-01	GEAR (P), FLATNESS	
352	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)		* 357	A-4699-295-A	BD (CD) BOARD, COMPLETE	
353	4-917-567-01	GEAR (M)		358	4-951-620-01	SCREW (2.6X8), +BVTP	
354	4-951-940-01	INSULATOR (BU)		M101	X-4917-523-4	MOTOR ASSY (SPINDLE)	
355	4-917-565-01	SHAFT, SLED					

(9) DETACHABLE CONTROLLER (REMOTE COMMANDER) SECTION
(RM-MD515)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
M102	X-4917-504-1	MOTOR ASSY (SLED)		* 406	1-667-085-11	BATT-A BOARD	
401	4-993-631-01	KNOB (VOL)		* 407	1-667-086-11	BATT-B BOARD	
402	4-993-632-01	ORNAMENT (RING VOL)		408	X-4948-925-1	CABINET (REAR) ASSY	
403	4-994-291-01	ORNAMENT (RING JOG)		409	4-993-633-01	LID, BATTERY CASE	
404	X-4948-924-1	CABINET (FRONT) ASSY		410	A-4332-232-A	RM-MD515	
* 405	A-4403-359-A	RM BOARD, COMPLETE		411	4-995-727-01	COVER (BATTERY CASE)	

SECTION 8 ELECTRICAL PARTS LIST

AMP

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA. . : μ A. . uPA. . : μ PA. .
uPB. . : μ PB. . uPC. . : μ PC. .
uPD. . : μ PD. .
- CAPACITORS
uF: μ F
- COILS
uH: μ H
- Abbreviation
AED : North European JE : Tourist
G : German MY : Malaysia
HK : Hong Kong SP : Singapore

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-4403-378-A	AMP BOARD, COMPLETE *****				< FUSE >	
	1-533-293-11	FUSE HOLDER		F801		FUSE (4A/250V) (US)	
		< CAPACITOR >		F801	1-532-504-31	FUSE, TIME-LAG (4A/250V) (EXCEPT US)	
C801	1-126-051-11	ELECT 47uF 20% 50V		F802		FUSE (4A/250V) (US)	
C802	1-162-282-31	CERAMIC 100PF 10% 50V		F802	1-532-504-31	FUSE, TIME-LAG (4A/250V) (EXCEPT US)	
C803	1-126-051-11	ELECT 47uF 20% 50V				< IC >	
C805	1-126-051-11	ELECT 47uF 20% 50V		IC801	8-749-900-96	IC STK-4142MK2	
C807	1-126-965-11	ELECT 22uF 20% 50V				< COIL >	
C808	1-136-165-00	FILM 0.1uF 5% 50V		L109	1-420-872-00	COIL, AIR-CORE	
C809	1-136-165-00	FILM 0.1uF 5% 50V		L159	1-420-872-00	COIL, AIR-CORE	
C830	1-126-933-11	ELECT 100uF 20% 10V				< TRANSISTOR >	
C831	1-126-923-11	ELECT 220uF 20% 10V		Q801	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA	
C832	1-126-933-11	ELECT 100uF 20% 10V		Q830	8-729-620-05	TRANSISTOR 2SC2603-EF	
C839	1-126-052-11	ELECT 100uF 20% 50V		Q831	8-729-620-05	TRANSISTOR 2SC2603-EF	
C851	1-126-051-11	ELECT 47uF 20% 50V		Q832	8-729-620-05	TRANSISTOR 2SC2603-EF	
C852	1-162-282-31	CERAMIC 100PF 10% 50V		Q833	8-729-422-61	TRANSISTOR UN4115	
C853	1-126-051-11	ELECT 47uF 20% 50V					
C854	1-126-051-11	ELECT 47uF 20% 50V		Q834	8-729-422-73	TRANSISTOR UN4212	
C855	1-126-052-11	ELECT 100uF 20% 50V		Q835	8-729-422-61	TRANSISTOR UN4115	
C856	1-164-159-11	CERAMIC 0.1uF 50V		Q851	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA	
C858	1-136-165-00	FILM 0.1uF 5% 50V				< RESISTOR >	
C859	1-136-165-00	FILM 0.1uF 5% 50V		R109	1-260-076-11	CARBON 10 5% 1/2W	
C891	1-117-922-11	ELECT 4700uF 20% 42V		R159	1-260-076-11	CARBON 10 5% 1/2W	
C892	1-117-922-11	ELECT 4700uF 20% 42V		R801	1-249-416-11	CARBON 820 5% 1/4W	
C893	1-136-165-00	FILM 0.1uF 5% 50V		R802	1-249-438-11	CARBON 56K 5% 1/4W	
C894	1-136-165-00	FILM 0.1uF 5% 50V		R803	1-249-416-11	CARBON 820 5% 1/4W	
		< CONNECTOR >		R804	1-249-438-11	CARBON 56K 5% 1/4W	
* CN800	1-568-949-11	PIN, CONNECTOR 11P		R805	1-260-103-11	CARBON 2.2K 5% 1/2W	
* CN801	1-564-518-11	PLUG, CONNECTOR 3P		R806	1-260-103-11	CARBON 2.2K 5% 1/2W	
* CN802	1-564-519-11	PLUG, CONNECTOR 4P		R807	1-260-099-11	CARBON 1K 5% 1/2W	
		< DIODE >		R808	1-260-099-11	CARBON 1K 5% 1/2W	
D801	8-719-987-63	DIODE 1N4148M		Δ R809	1-212-881-11	FUSIBLE 100 5% 1/4W F	
D802	8-719-987-63	DIODE 1N4148M		Δ R810	1-217-151-00	RES, METAL PLATE 0.22 10% 2W F	
D830	8-719-987-63	DIODE 1N4148M		R811	1-249-417-11	CARBON 1K 5% 1/4W	
D851	8-719-987-63	DIODE 1N4148M		R812	1-249-431-11	CARBON 15K 5% 1/4W	
D852	8-719-987-63	DIODE 1N4148M		R813	1-249-441-11	CARBON 100K 5% 1/4W	
D891	8-719-025-03	DIODE RBA-402-SL		R814	1-260-076-11	CARBON 10 5% 1/2W	
				R815	1-249-431-11	CARBON 15K 5% 1/4W	

AMP	BATT-A	BATT-B	BD (CD)
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Ref. No.	Part No.	Description	Remark
R830	1-249-431-11	CARBON 15K 5%	1/4W
R831	1-249-425-11	CARBON 4.7K 5%	1/4W
△ R832	1-247-749-11	CARBON 560 5%	1/2W F
R833	1-249-417-11	CARBON 1K 5%	1/4W
R834	1-249-429-11	CARBON 10K 5%	1/4W
R835	1-249-425-11	CARBON 4.7K 5%	1/4W
R836	1-249-439-11	CARBON 68K 5%	1/4W
R837	1-249-437-11	CARBON 47K 5%	1/4W
R838	1-249-417-11	CARBON 1K 5%	1/4W
R839	1-249-441-11	CARBON 100K 5%	1/4W
R840	1-249-417-11	CARBON 1K 5%	1/4W
R841	1-260-097-11	CARBON 680 5%	1/2W
R842	1-260-097-11	CARBON 680 5%	1/2W
R843	1-260-097-11	CARBON 680 5%	1/2W
R844	1-260-097-11	CARBON 680 5%	1/2W
R845	1-249-429-11	CARBON 10K 5%	1/4W
R851	1-249-416-11	CARBON 820 5%	1/4W
R852	1-249-438-11	CARBON 56K 5%	1/4W
R853	1-249-416-11	CARBON 820 5%	1/4W
R854	1-249-438-11	CARBON 56K 5%	1/4W
R855	1-260-103-11	CARBON 2.2K 5%	1/2W
R856	1-260-103-11	CARBON 2.2K 5%	1/2W
△ R857	1-202-972-61	FUSIBLE 1 5%	1/4W F
△ R859	1-212-881-11	FUSIBLE 100 5%	1/4W F
△ R860	1-217-151-00	RES, METAL PLATE 0.22 10%	2W F
R861	1-249-417-11	CARBON 1K 5%	1/4W
R862	1-249-431-11	CARBON 15K 5%	1/4W
R863	1-249-441-11	CARBON 100K 5%	1/4W
R864	1-260-076-11	CARBON 10 5%	1/2W
R865	1-249-431-11	CARBON 15K 5%	1/4W
< RELAY >			
RY800	1-515-920-11	RELAY (24V)	

*	1-667-085-11	BATT-A BOARD	

< CHIP CONDUCTOR >			
L1	1-216-296-00	CONDUCTOR, CHIP (3216)	

*	1-667-086-11	BATT-B BOARD	

	1-779-905-11	SOCKET, CONNECTOR	
	4-969-086-01	TERMINAL BOARD, BATTERY	
< CONNECTOR >			
* CN2	1-568-954-11	PIN, CONNECTOR 5P	

*	A-4699-295-A	BD (CD) BOARD, COMPLETE	

< CAPACITOR >			
C101	1-126-607-11	ELECT CHIP 47uF 20%	4V
C102	1-163-141-00	CERAMIC CHIP 0.001uF 5%	50V
C103	1-164-346-11	CERAMIC CHIP 1uF	16V
C105	1-163-038-00	CERAMIC CHIP 0.1uF	25V

Ref. No.	Part No.	Description	Remark
C106	1-164-161-11	CERAMIC CHIP 0.0022uF 10%	100V
C107	1-164-161-11	CERAMIC CHIP 0.0022uF 10%	100V
C108	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C109	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C110	1-163-989-11	CERAMIC CHIP 0.033uF 10%	25V
C111	1-163-017-00	CERAMIC CHIP 0.0047uF 5%	50V
C112	1-163-017-00	CERAMIC CHIP 0.0047uF 5%	50V
C113	1-164-161-11	CERAMIC CHIP 0.0022uF 10%	100V
C114	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C115	1-126-607-11	ELECT CHIP 47uF 20%	4V
C116	1-163-016-00	CERAMIC CHIP 0.0039uF 10%	50V
C117	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C118	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C119	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C120	1-124-779-00	ELECT CHIP 10uF 20%	16V
C121	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C122	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C123	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C124	1-126-607-11	ELECT CHIP 47uF 20%	4V
C125	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C126	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C127	1-164-161-11	CERAMIC CHIP 0.0022uF 10%	100V
C128	1-163-135-00	CERAMIC CHIP 560PF 5%	50V
C129	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C130	1-164-336-11	CERAMIC CHIP 0.33uF	25V
C131	1-164-346-11	CERAMIC CHIP 1uF	16V
C140	1-110-501-11	CERAMIC CHIP 0.33uF 10%	16V
C154	1-163-235-11	CERAMIC CHIP 22PF 5%	50V
C161	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C162	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C163	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C164	1-163-145-00	CERAMIC CHIP 0.0015uF 5%	50V
C165	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C166	1-163-137-00	CERAMIC CHIP 680PF 5%	50V
C167	1-163-121-00	CERAMIC CHIP 150PF 5%	50V
C168	1-163-137-00	CERAMIC CHIP 680PF 5%	50V
C169	1-163-121-00	CERAMIC CHIP 150PF 5%	50V
C170	1-163-099-00	CERAMIC CHIP 18PF 5%	50V
C171	1-163-237-11	CERAMIC CHIP 27PF 5%	50V
C173	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C174	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C175	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C176	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C177	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C178	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C179	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C180	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C181	1-126-205-11	ELECT CHIP 47uF 20%	6.3V
C182	1-126-393-11	ELECT 33uF 20%	10V
C183	1-124-778-00	ELECT CHIP 22uF 20%	6.3V
C185	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C188	1-163-235-11	CERAMIC CHIP 22PF 5%	50V
C189	1-163-235-11	CERAMIC CHIP 22PF 5%	50V
< CONNECTOR >			
CNU101	1-770-014-11	CONNECTOR, FFC/FPC 16P	
CNU102	1-770-072-11	CONNECTOR,(LIF(NON-ZIF))FFC23P	

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description				Remark	Ref. No.	Part No.	Description				Remark	
< FERRITE BEAD >							R164	1-216-061-00	METAL CHIP	3.3K	5%	1/10W		
FB101	1-414-234-11	INDUCTOR, FERRITE BEAD					R165	1-216-049-11	METAL CHIP	1K	5%	1/10W		
FB103	1-414-234-11	INDUCTOR, FERRITE BEAD					R166	1-216-073-00	METAL CHIP	10K	5%	1/10W		
< IC >							R167	1-216-081-00	METAL CHIP	22K	5%	1/10W		
							R168	1-216-073-00	METAL CHIP	10K	5%	1/10W		
							R169	1-216-079-00	METAL CHIP	18K	5%	1/10W		
IC101	8-752-080-62	IC CXA1992AR												
IC102	8-759-429-32	IC BA5941FP-E2					R170	1-216-081-00	METAL CHIP	22K	5%	1/10W		
IC103	8-752-378-66	IC CXD2519Q					R171	1-216-073-00	METAL CHIP	10K	5%	1/10W		
IC104	8-759-428-57	IC LC89170M-TLM					R172	1-216-079-00	METAL CHIP	18K	5%	1/10W		
< CHIP CONDUCTOR >							R173	1-216-025-91	METAL CHIP	100	5%	1/10W		
							R174	1-216-033-00	METAL CHIP	220	5%	1/10W		
JW102	1-216-295-00	CONDUCTOR, CHIP (2012)					R175	1-216-025-91	METAL CHIP	100	5%	1/10W		
JW104	1-216-295-00	CONDUCTOR, CHIP (2012)					R176	1-216-025-91	METAL CHIP	100	5%	1/10W		
< TRANSISTOR >							R177	1-216-025-91	METAL CHIP	100	5%	1/10W		
							R178	1-216-025-91	METAL CHIP	100	5%	1/10W		
							R179	1-216-025-91	METAL CHIP	100	5%	1/10W		
Q101	8-729-010-08	TRANSISTOR MSB710-R					R180	1-216-025-91	METAL CHIP	100	5%	1/10W		
< RESISTOR >							R181	1-216-025-91	METAL CHIP	100	5%	1/10W		
							R182	1-216-025-91	METAL CHIP	100	5%	1/10W		
R102	1-216-001-00	METAL CHIP	10	5%	1/10W		R183	1-216-025-91	METAL CHIP	100	5%	1/10W		
R104	1-216-093-00	METAL CHIP	68K	5%	1/10W		R184	1-216-025-91	METAL CHIP	100	5%	1/10W		
R105	1-216-088-00	METAL CHIP	43K	5%	1/10W									
R106	1-216-088-00	METAL CHIP	43K	5%	1/10W		R185	1-216-025-91	METAL CHIP	100	5%	1/10W		
R107	1-216-088-00	METAL CHIP	43K	5%	1/10W		R187	1-216-033-00	METAL CHIP	220	5%	1/10W		
							R188	1-216-037-00	METAL CHIP	330	5%	1/10W		
R108	1-216-088-00	METAL CHIP	43K	5%	1/10W		R190	1-216-097-91	METAL CHIP	100K	5%	1/10W		
R109	1-216-093-00	METAL CHIP	68K	5%	1/10W		R191	1-216-105-91	METAL CHIP	220K	5%	1/10W		
R114	1-216-101-00	METAL CHIP	150K	5%	1/10W		< SWITCH >							
R115	1-216-101-00	METAL CHIP	150K	5%	1/10W									
R116	1-216-061-00	METAL CHIP	3.3K	5%	1/10W		S101	1-572-085-11	SWITCH, LEAF (LIMIT)					
R117	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		< VIBRATOR >							
R118	1-216-063-91	METAL CHIP	3.9K	5%	1/10W									
R119	1-216-085-00	METAL CHIP	33K	5%	1/10W									
R120	1-216-089-91	METAL CHIP	47K	5%	1/10W		X101	1-767-408-21	VIBRATOR, CRYSTAL (16.9344MHz)					
R121	1-216-114-00	METAL CHIP	510K	5%	1/10W		*****							
							* A-4699-823-A	BD (MD) BOARD, COMPLETE						
R122	1-216-097-91	METAL CHIP	100K	5%	1/10W		*****							
R123	1-216-099-00	METAL CHIP	120K	5%	1/10W		< CAPACITOR >							
R124	1-216-091-00	METAL CHIP	56K	5%	1/10W									
R125	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		C001	1-163-038-00	CERAMIC CHIP	0.1uF		25V		
R126	1-216-063-91	METAL CHIP	3.9K	5%	1/10W		C002	1-163-038-00	CERAMIC CHIP	0.1uF		25V		
R127	1-216-089-91	METAL CHIP	47K	5%	1/10W		C003	1-163-038-00	CERAMIC CHIP	0.1uF		25V		
R128	1-216-098-00	METAL CHIP	110K	5%	1/10W		C004	1-163-038-00	CERAMIC CHIP	0.1uF		25V		
R129	1-216-025-91	METAL CHIP	100	5%	1/10W		C005	1-163-038-00	CERAMIC CHIP	0.1uF		25V		
R130	1-216-079-00	METAL CHIP	18K	5%	1/10W									
R131	1-216-079-00	METAL CHIP	18K	5%	1/10W		C006	1-163-038-00	CERAMIC CHIP	0.1uF		25V		
R132	1-216-061-00	METAL CHIP	3.3K	5%	1/10W		C101	1-115-363-11	CERAMIC CHIP	10uF		10V		
R133	1-216-061-00	METAL CHIP	3.3K	5%	1/10W		C102	1-107-682-11	CERAMIC CHIP	1uF	10%	16V		
R134	1-216-065-00	METAL CHIP	4.7K	5%	1/10W		C103	1-115-363-11	CERAMIC CHIP	10uF		10V		
R135	1-216-065-00	METAL CHIP	4.7K	5%	1/10W		C104	1-115-363-11	CERAMIC CHIP	10uF		10V		
R136	1-216-073-00	METAL CHIP	10K	5%	1/10W									
R137	1-216-065-00	METAL CHIP	4.7K	5%	1/10W		C105	1-164-232-11	CERAMIC CHIP	0.01uF		50V		
R138	1-216-025-91	METAL CHIP	100	5%	1/10W		C106	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V		
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W		C107	1-163-038-00	CERAMIC CHIP	0.1uF		25V		
R157	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		C108	1-163-038-00	CERAMIC CHIP	0.1uF		25V		
R158	1-216-001-00	METAL CHIP	10	5%	1/10W		C109	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V		
							C110	1-163-038-00	CERAMIC CHIP	0.1uF		25V		
R159	1-216-121-91	METAL CHIP	1M	5%	1/10W		C111	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V		
R161	1-216-097-91	METAL CHIP	100K	5%	1/10W		C112	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V		
R162	1-216-073-00	METAL CHIP	10K	5%	1/10W		C113	1-107-682-11	CERAMIC CHIP	1uF	10%	16V		
R163	1-216-121-91	METAL CHIP	1M	5%	1/10W		C115	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V		

BD (MD)

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C116	1-163-037-11	CERAMIC CHIP	0.022uF 10% 25V	C214	1-115-363-11	CERAMIC CHIP	10uF 10V
C117	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C215	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C118	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C216	1-115-363-11	CERAMIC CHIP	10uF 10V
C119	1-115-363-11	CERAMIC CHIP	10uF 10V	C350	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C121	1-126-206-11	ELECT CHIP	100uF 20% 6.3V	C351	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C122	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C352	1-126-204-11	ELECT CHIP	47uF 20% 16V
C123	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C353	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C124	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C354	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C127	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C355	1-163-251-11	CERAMIC CHIP	100PF 5% 50V
C128	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C357	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C129	1-107-823-11	CERAMIC CHIP	0.47uF 10% 16V	C358	1-163-251-11	CERAMIC CHIP	100PF 5% 50V
C130	1-163-251-11	CERAMIC CHIP	100PF 5% 50V	C359	1-163-251-11	CERAMIC CHIP	100PF 5% 50V
C131	1-163-023-00	CERAMIC CHIP	0.015uF 5% 50V	C360	1-163-251-11	CERAMIC CHIP	100PF 5% 50V
C132	1-107-823-11	CERAMIC CHIP	0.47uF 10% 16V	C361	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C133	1-163-017-00	CERAMIC CHIP	0.0047uF 5% 50V	C362	1-163-251-11	CERAMIC CHIP	100PF 5% 50V
C134	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C363	1-163-251-11	CERAMIC CHIP	100PF 5% 50V
C135	1-163-038-00	CERAMIC CHIP	0.1uF 25V	< CONNECTOR >			
C136	1-126-206-11	ELECT CHIP	100uF 20% 6.3V	CN101	1-766-508-11	CONNECTOR, FFC/FPC (ZIF)	22P
C139	1-163-229-11	CERAMIC CHIP	12PF 5% 50V	CN104	1-766-898-21	HOUSING, CONNECTOR(PC BOARD)4P	
C140	1-163-229-11	CERAMIC CHIP	12PF 5% 50V	CN107	1-770-072-11	CONNECTOR,(LIF(NON-ZIF))FFC23P	
C142	1-163-251-11	CERAMIC CHIP	100PF 5% 50V	CN108	1-750-499-21	PIN, CONNECTOR (PC BOARD) 5P	
C143	1-163-251-11	CERAMIC CHIP	100PF 5% 50V	* CN109	1-750-494-31	PIN, CONNECTOR (PC BOARD) 6P	
C144	1-163-251-11	CERAMIC CHIP	100PF 5% 50V	< DIODE >			
C151	1-126-206-11	ELECT CHIP	100uF 20% 6.3V	D101	8-719-988-62	DIODE 1SS355	
C152	1-163-038-00	CERAMIC CHIP	0.1uF 25V	D181	8-719-046-86	DIODE F1J6TP	
C153	1-164-232-11	CERAMIC CHIP	0.01uF 50V	D183	8-719-046-86	DIODE F1J6TP	
C156	1-163-038-00	CERAMIC CHIP	0.1uF 25V	< IC >			
C158	1-163-019-00	CERAMIC CHIP	0.0068uF 10% 50V	IC101	8-752-080-95	IC CXA2523AR	
C160	1-115-363-11	CERAMIC CHIP	10uF 10V	IC121	8-752-384-47	IC CXD2652AR	
C161	1-115-363-11	CERAMIC CHIP	10uF 10V	IC124	8-759-334-38	IC MSM51V4400-70TS-K	
C163	1-164-232-11	CERAMIC CHIP	0.01uF 50V	IC152	8-759-430-25	IC BH6511FS-E2	
C164	1-164-232-11	CERAMIC CHIP	0.01uF 50V	IC171	8-759-428-58	IC XL24C01AF-E2	
C167	1-163-038-00	CERAMIC CHIP	0.1uF 25V	IC172	8-759-040-83	IC BA6287F	
C168	1-163-038-00	CERAMIC CHIP	0.1uF 25V	IC181	8-759-481-17	IC MC74ACT08DTR2	
C169	1-115-363-11	CERAMIC CHIP	10uF 10V	IC192	8-759-460-72	IC BA033FP	
C171	1-163-038-00	CERAMIC CHIP	0.1uF 25V	IC201	8-759-471-38	IC AK4520A-VF-E2	
C181	1-126-206-11	ELECT CHIP	100uF 20% 6.3V	IC316	8-759-480-92	IC M30610MC-102FP	
C182	1-163-038-00	CERAMIC CHIP	0.1uF 25V	< COIL >			
C183	1-163-038-00	CERAMIC CHIP	0.1uF 25V	L001	1-414-813-11	INDUCTOR	
C184	1-117-962-11	SOLID CHIP	22uF 20% 6.3V	L002	1-414-813-11	INDUCTOR	
C185	1-164-611-11	CERAMIC CHIP	0.001uF 10% 500V	L003	1-414-813-11	INDUCTOR	
C188	1-164-232-11	CERAMIC CHIP	0.01uF 50V	L004	1-414-813-11	INDUCTOR	
C189	1-163-989-11	CERAMIC CHIP	0.033uF 10% 25V	L008	1-500-445-21	INDUCTOR	
C190	1-126-206-11	ELECT CHIP	100uF 20% 6.3V	L101	1-414-813-11	INDUCTOR	
C191	1-163-038-00	CERAMIC CHIP	0.1uF 25V	L102	1-414-813-11	INDUCTOR	
C192	1-163-038-00	CERAMIC CHIP	0.1uF 25V	L103	1-414-813-11	INDUCTOR	
C197	1-163-038-00	CERAMIC CHIP	0.1uF 25V	L105	1-414-813-11	INDUCTOR	
C201	1-164-695-11	CERAMIC CHIP	0.0022uF 5% 50V	L106	1-414-813-11	INDUCTOR	
C202	1-164-695-11	CERAMIC CHIP	0.0022uF 5% 50V	L122	1-414-813-11	INDUCTOR	
C203	1-163-038-00	CERAMIC CHIP	0.1uF 25V	L151	1-412-622-51	INDUCTOR 10uH	
C205	1-115-363-11	CERAMIC CHIP	10uF 10V	L152	1-412-622-51	INDUCTOR 10uH	
C206	1-115-363-11	CERAMIC CHIP	10uF 10V	L153	1-412-039-51	INDUCTOR CHIP 100uH	
C207	1-163-038-00	CERAMIC CHIP	0.1uF 25V	L154	1-412-039-51	INDUCTOR CHIP 100uH	
C208	1-115-363-11	CERAMIC CHIP	10uF 10V	L161	1-414-813-11	INDUCTOR	
C209	1-163-038-00	CERAMIC CHIP	0.1uF 25V				
C210	1-163-038-00	CERAMIC CHIP	0.1uF 25V				
C212	1-163-038-00	CERAMIC CHIP	0.1uF 25V				
C213	1-115-363-11	CERAMIC CHIP	10uF 10V				

Ref. No.	Part No.	Description				Remark	Ref. No.	Part No.	Description				Remark
L162	1-414-813-11	INDUCTOR					R171	1-216-073-00	METAL CHIP	10K	5%	1/10W	
L201	1-414-813-11	INDUCTOR					R175	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
L301	1-414-813-11	INDUCTOR					R177	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
L351	1-414-813-11	INDUCTOR					R178	1-216-295-00	CONDUCTOR, CHIP (2012)				
< TRANSISTOR >							R179	1-216-091-00	METAL CHIP	56K	5%	1/10W	
							R180	1-216-073-00	METAL CHIP	10K	5%	1/10W	
Q101	8-729-028-91	TRANSISTOR	DTA144EUA-T106				R181	1-216-073-00	METAL CHIP	10K	5%	1/10W	
Q102	8-729-026-53	TRANSISTOR	2SA1576A-T106-QR				R182	1-216-089-00	METAL CHIP	47K	5%	1/10W	
Q103	8-729-028-99	TRANSISTOR	RN1307-TE85L				R183	1-216-089-00	METAL CHIP	47K	5%	1/10W	
Q104	8-729-028-99	TRANSISTOR	RN1307-TE85L										
Q113	8-729-903-10	TRANSISTOR	FMW1				R184	1-216-073-00	METAL CHIP	10K	5%	1/10W	
							R188	1-216-073-00	METAL CHIP	10K	5%	1/10W	
Q162	8-729-101-07	TRANSISTOR	2SB798-DL				R189	1-216-073-00	METAL CHIP	10K	5%	1/10W	
Q163	8-729-028-91	TRANSISTOR	DTA144EUA-T106				R190	1-216-073-00	METAL CHIP	10K	5%	1/10W	
Q181	8-729-018-75	TRANSISTOR	2SJ278MY				R195	1-216-295-00	CONDUCTOR, CHIP (2012)				
Q182	8-729-017-65	TRANSISTOR	2SK1764KY										
< RESISTOR/CHIP CONDUCTOR >							R196	1-216-041-00	METAL CHIP	470	5%	1/10W	
							R198	1-216-295-00	CONDUCTOR, CHIP (2012)				
							R199	1-216-295-00	CONDUCTOR, CHIP (2012)				
R100	1-216-121-00	METAL CHIP	1M	5%	1/10W		R200	1-216-295-00	CONDUCTOR, CHIP (2012)				
R101	1-216-047-00	METAL CHIP	820	5%	1/10W								
R103	1-216-049-11	METAL CHIP	1K	5%	1/10W		R201	1-219-724-11	METAL CHIP	1	1%	1/4W	
R104	1-216-073-00	METAL CHIP	10K	5%	1/10W		R202	1-216-041-00	METAL CHIP	470	5%	1/10W	
R105	1-216-065-00	METAL CHIP	4.7K	5%	1/10W		R203	1-216-025-00	METAL CHIP	100	5%	1/10W	
							R204	1-216-025-00	METAL CHIP	100	5%	1/10W	
R106	1-216-133-00	METAL CHIP	3.3M	5%	1/10W		R210	1-216-041-00	METAL CHIP	470	5%	1/10W	
R107	1-216-113-00	METAL CHIP	470K	5%	1/10W								
R110	1-216-073-00	METAL CHIP	10K	5%	1/10W		R330	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R112	1-216-089-00	METAL CHIP	47K	5%	1/10W		R331	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R113	1-216-049-11	METAL CHIP	1K	5%	1/10W		R332	1-216-073-00	METAL CHIP	10K	5%	1/10W	
							R333	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R115	1-216-049-11	METAL CHIP	1K	5%	1/10W		R351	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R117	1-216-113-00	METAL CHIP	470K	5%	1/10W								
R121	1-216-097-00	METAL CHIP	100K	5%	1/10W		R352	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R125	1-216-049-11	METAL CHIP	1K	5%	1/10W		R353	1-216-295-00	CONDUCTOR, CHIP (2012)				
R128	1-216-041-00	METAL CHIP	470	5%	1/10W		R361	1-216-097-00	METAL CHIP	100K	5%	1/10W	
							R362	1-216-025-00	METAL CHIP	100	5%	1/10W	
R131	1-216-073-00	METAL CHIP	10K	5%	1/10W		R363	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R132	1-216-097-00	METAL CHIP	100K	5%	1/10W								
R133	1-216-117-00	METAL CHIP	680K	5%	1/10W		R366	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R134	1-216-049-11	METAL CHIP	1K	5%	1/10W		R367	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R135	1-216-061-00	METAL CHIP	3.3K	5%	1/10W		R379	1-216-073-00	METAL CHIP	10K	5%	1/10W	
							R380	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R136	1-216-049-11	METAL CHIP	1K	5%	1/10W		R381	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R137	1-216-025-00	METAL CHIP	100	5%	1/10W								
R140	1-216-029-00	METAL CHIP	150	5%	1/10W		R382	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R142	1-216-073-00	METAL CHIP	10K	5%	1/10W		R383	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R143	1-216-073-00	METAL CHIP	10K	5%	1/10W		R384	1-216-073-00	METAL CHIP	10K	5%	1/10W	
							R385	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R144	1-216-025-00	METAL CHIP	100	5%	1/10W		R386	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R146	1-216-037-00	METAL CHIP	330	5%	1/10W								
R147	1-216-025-00	METAL CHIP	100	5%	1/10W		R391	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R148	1-216-045-00	METAL CHIP	680	5%	1/10W		R393	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R158	1-216-097-00	METAL CHIP	100K	5%	1/10W		R400	1-216-073-00	METAL CHIP	10K	5%	1/10W	
							R420	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R159	1-216-097-00	METAL CHIP	100K	5%	1/10W		R421	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R160	1-216-295-00	CONDUCTOR, CHIP (2012)											
R161	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		R422	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R162	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		R423	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R163	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		R424	1-216-097-00	METAL CHIP	100K	5%	1/10W	
							R425	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R164	1-216-033-00	METAL CHIP	220	5%	1/10W		R429	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R165	1-216-097-00	METAL CHIP	100K	5%	1/10W								
R166	1-220-149-11	METAL CHIP	2.2	10%	1/2W		R430	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R167	1-216-065-00	METAL CHIP	4.7K	5%	1/10W		R431	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R169	1-219-724-11	METAL CHIP	1	1%	1/4W		R433	1-216-097-00	METAL CHIP	100K	5%	1/10W	
							R434	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R170	1-216-073-00	METAL CHIP	10K	5%	1/10W		R435	1-216-097-00	METAL CHIP	100K	5%	1/10W	

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R436	1-216-097-00	METAL CHIP	100K	5%	1/10W			< CONNECTOR >			
R437	1-216-097-00	METAL CHIP	100K	5%	1/10W						
R438	1-216-073-00	METAL CHIP	10K	5%	1/10W	* CN690	1-568-836-11	SOCKET, CONNECTOR 17P			
R439	1-216-073-00	METAL CHIP	10K	5%	1/10W	* CN691	1-564-724-11	PIN, CONNECTOR (SMALL TYPE) 8P			
R440	1-216-073-00	METAL CHIP	10K	5%	1/10W	CN692	1-506-481-11	PIN, CONNECTOR 2P			
						* CN693	1-568-941-11	PIN, CONNECTOR 3P			
R441	1-216-097-00	METAL CHIP	100K	5%	1/10W	* CN694	1-564-720-11	PIN, CONNECTOR (SMALL TYPE) 4P			
R442	1-216-097-00	METAL CHIP	100K	5%	1/10W						
R443	1-216-097-00	METAL CHIP	100K	5%	1/10W			< DIODE >			
R444	1-216-097-00	METAL CHIP	100K	5%	1/10W						
R445	1-216-097-00	METAL CHIP	100K	5%	1/10W	D690	8-719-010-29	DIODE UZ-4.3BSB			
						D691	8-719-010-38	DIODE UZ-5.1BSB			
R446	1-216-097-00	METAL CHIP	100K	5%	1/10W						
R447	1-216-097-00	METAL CHIP	100K	5%	1/10W			< IC >			
R448	1-216-097-00	METAL CHIP	100K	5%	1/10W						
R449	1-216-097-00	METAL CHIP	100K	5%	1/10W	IC690	8-759-277-68	IC LB1648			
R451	1-216-097-00	METAL CHIP	100K	5%	1/10W						
								< RESISTOR >			
R452	1-216-097-00	METAL CHIP	100K	5%	1/10W						
R453	1-216-097-00	METAL CHIP	100K	5%	1/10W	R690	1-247-807-31	CARBON 100 5%	1/4W		
R454	1-216-097-00	METAL CHIP	100K	5%	1/10W	R691	1-247-807-31	CARBON 100 5%	1/4W		
R455	1-216-097-00	METAL CHIP	100K	5%	1/10W	R693	1-247-807-31	CARBON 100 5%	1/4W		
R456	1-216-097-00	METAL CHIP	100K	5%	1/10W	R694	1-247-807-31	CARBON 100 5%	1/4W		
						R695	1-249-411-11	CARBON 330 5%	1/4W		
R457	1-216-097-00	METAL CHIP	100K	5%	1/10W						
R458	1-216-097-00	METAL CHIP	100K	5%	1/10W	R696	1-249-411-11	CARBON 330 5%	1/4W		
R460	1-216-073-00	METAL CHIP	10K	5%	1/10W	R697	1-249-411-11	CARBON 330 5%	1/4W		
R463	1-216-073-00	METAL CHIP	10K	5%	1/10W	*****					
R502	1-216-295-00	CONDUCTOR, CHIP (2012)									
						*	1-651-397-11	COUNT SW BOARD *****			
R504	1-216-295-00	CONDUCTOR, CHIP (2012)									
R602	1-216-025-00	METAL CHIP	100	5%	1/10W						
R603	1-216-025-00	METAL CHIP	100	5%	1/10W			< SWITCH >			
R604	1-216-061-00	METAL CHIP	3.3K	5%	1/10W						
R605	1-216-025-00	METAL CHIP	100	5%	1/10W	SW502	1-692-193-11	SWITCH, PUSH (1 KEY) (INIT)			
						SW503	1-572-126-11	SWITCH, PUSH (1 KEY) (COUNT)			
R606	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	*****					
R607	1-216-061-00	METAL CHIP	3.3K	5%	1/10W						
R608	1-216-025-00	METAL CHIP	100	5%	1/10W	*	1-651-398-11	DISC SENS (A) BOARD *****			
R617	1-216-025-00	METAL CHIP	100	5%	1/10W						
R618	1-216-025-00	METAL CHIP	100	5%	1/10W			< DIODE >			
R619	1-216-025-00	METAL CHIP	100	5%	1/10W						
R621	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	D501	8-719-029-95	LED TLN117			
R622	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	*****					
R623	1-216-069-00	METAL CHIP	6.8K	5%	1/10W						
R624	1-216-073-00	METAL CHIP	10K	5%	1/10W	*	1-651-399-11	DISC SENS (B) BOARD *****			
R995	1-216-295-00	CONDUCTOR, CHIP (2012)									
R2000	1-216-025-00	METAL CHIP	100	5%	1/10W			< CONNECTOR >			
R2001	1-216-295-00	CONDUCTOR, CHIP (2012)									
R2002	1-414-813-11	INDUCTOR, CHIP				* CN510	1-568-941-11	PIN, CONNECTOR 3P			
R2003	1-216-295-00	CONDUCTOR, CHIP (2012)						< TRANSISTOR >			
		< VIBRATOR >									
						Q501	8-729-018-23	TRANSISTOR TPS626			
X100	1-579-870-21	VIBRATOR, CRYSTAL (22.5792MHz)									
X302	1-767-670-11	VIBRATOR, CERAMIC (7MHz)						< RESISTOR >			

*	1-667-082-11	CDM BOARD *****									
		< CAPACITOR >									
C690	1-126-923-11	ELECT	220uF	20%	10V			< CONNECTOR >			
						R502	1-249-425-11	CARBON 4.7K 5%	1/4W		

*						*	1-667-393-11	DISC SW BOARD *****			
C690	1-126-923-11	ELECT	220uF	20%	10V			< CONNECTOR >			
						* CNP14	1-568-826-11	SOCKET, CONNECTOR 7P			

DISC SW
ELV RELAY
HEAD SW
HP
IN SW
JOINT

Ref. No.	Part No.	Description	Remark			
		< SWITCH >				
S1	1-771-225-11	SWITCH, LEVER (DISC1 IN DETECT)				
S3	1-771-225-11	SWITCH, LEVER (DISC2 IN DETECT)				
S5	1-771-225-11	SWITCH, LEVER (DISC3 IN DETECT)				

*	1-667-394-11	ELV RELAY BOARD				

		< CAPACITOR >				
C1	1-126-933-11	ELECT	100uF	20%	10V	
C2	1-161-494-00	CERAMIC	0.022uF		25V	
C3	1-161-494-00	CERAMIC	0.022uF		25V	
		< CONNECTOR >				
* CNP11	1-568-832-11	SOCKET, CONNECTOR 13P				
* CNP16	1-568-848-11	SOCKET, CONNECTOR 5P				
* CNP17	1-568-848-11	SOCKET, CONNECTOR 5P				
		< PHOTO INTERRUPTER >				
D1	8-749-012-33	PHOTO INTERRUPTER GP1S94				
D2	8-749-012-33	PHOTO INTERRUPTER GP1S94				
		< TRANSISTOR >				
Q1	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q2	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q3	8-729-119-76	TRANSISTOR 2SA1175-HFE				
		< RESISTOR >				
R1	1-249-412-11	CARBON	390	5%	1/4W	
R2	1-249-412-11	CARBON	390	5%	1/4W	
R3	1-249-433-11	CARBON	22K	5%	1/4W	
R4	1-249-425-11	CARBON	4.7K	5%	1/4W	
R5	1-249-437-11	CARBON	47K	5%	1/4W	
		< SWITCH >				
S8	1-771-225-11	SWITCH, LEVER (HOME POSITION DETECT)				
S9	1-771-225-11	SWITCH, LEVER (RESET)				

*	1-667-395-11	HEAD SW BOARD				

		< CONNECTOR >				
* CNP18	1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P				
		< SWITCH >				
S6	1-762-987-11	SWITCH, PUSH (HEAD UP DETECT)				
S7	1-762-987-11	SWITCH, PUSH (HEAD DOWN DETECT)				

*	1-667-073-11	HP BOARD				

		< CAPACITOR >				
C231	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C281	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C286	1-165-319-11	CERAMIC CHIP	0.1uF		50V	

Ref. No.	Part No.	Description	Remark			
		< CONNECTOR >				
CN231	1-691-767-11	PLUG (MICRO CONNECTOR) 5P				
		< JACK >				
J230	1-750-032-31	JACK (DIA. 3.5) (PHONES)				
		< LEAD CONNECTOR >				
* WIRE2	1-690-880-31	LEAD (WITH CONNECTOR)				

*	1-651-395-11	IN SW BOARD				

		< CONNECTOR >				
* CN502	1-568-951-11	PIN, CONNECTOR 2P				
		< SWITCH >				
SW501	1-692-193-11	SWITCH, PUSH (1 KEY) (STOCKER)				

*	1-667-075-11	JOINT BOARD				

		< CAPACITOR >				
C791	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C792	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C793	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C794	1-117-370-11	CERAMIC CHIP	10uF		10V	
		< CONNECTOR >				
* CN790	1-564-521-11	PLUG, CONNECTOR 6P				
CN791	1-779-853-11	PIN, CONNECTOR 3P				
		< DIODE >				
D791	8-719-988-62	DIODE 1SS355				
D792	8-719-988-62	DIODE 1SS355				
D794	8-719-988-62	DIODE 1SS355				
		< IC >				
IC791	8-749-011-03	IC GP1U26X				
		< TRANSISTOR >				
Q791	8-729-120-28	TRANSISTOR 2SC1623-L5L6				
Q792	8-729-120-28	TRANSISTOR 2SC1623-L5L6				
Q793	8-729-600-22	TRANSISTOR 2SA1235-F				
		< RESISTOR >				
R790	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R791	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R792	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R793	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R794	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R795	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R796	1-216-009-00	METAL CHIP	22	5%	1/10W	
R797	1-216-025-00	METAL CHIP	100	5%	1/10W	
R798	1-216-073-00	METAL CHIP	10K	5%	1/10W	

JOINT	KEY	MAIN
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Ref. No.	Part No.	Description	Remark		
R799	1-216-097-00	METAL CHIP	100K	5%	1/10W

*	1-667-070-11	KEY BOARD	*****		
< CONNECTOR >					
CN780	1-691-770-11	PLUG (MICRO CONNECTOR) 8P			
< DIODE >					
D780	8-719-056-11	LED SML72423C-TP4 (MD1)			
D781	8-719-056-11	LED SML72423C-TP4 (MD2)			
D782	8-719-056-11	LED SML72423C-TP4 (MD3)			
< RESISTOR >					
R780	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R783	1-216-033-00	METAL CHIP	220	5%	1/10W
R784	1-216-037-00	METAL CHIP	330	5%	1/10W
R785	1-216-033-00	METAL CHIP	220	5%	1/10W
R786	1-216-037-00	METAL CHIP	330	5%	1/10W
R787	1-216-033-00	METAL CHIP	220	5%	1/10W
R788	1-216-037-00	METAL CHIP	330	5%	1/10W
< SWITCH >					
S780	1-762-875-21	SWITCH, KEYBOARD (MD ▲)			

*	A-4403-362-A	MAIN BOARD, COMPLETE (AEP, UK, G, AED)			
*	A-4403-363-A	MAIN BOARD, COMPLETE (MY, SP, HK)			
*	A-4403-364-A	MAIN BOARD, COMPLETE (US)			
*	A-4407-369-A	MAIN BOARD, COMPLETE (JE)	*****		
< CAPACITOR >					
C101	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C102	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C103	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C105	1-126-048-81	ELECT	10uF	20%	50V
C106	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C107	1-126-048-81	ELECT	10uF	20%	50V
C108	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C110	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C111	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C112	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C113	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C114	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C115	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C116	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C117	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C118	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C119	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C120	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C121	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C122	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C123	1-126-059-11	ELECT	10uF	20%	50V
C124	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C125	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C126	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C127	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V

Ref. No.	Part No.	Description	Remark		
C128	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C129	1-126-157-11	ELECT	10uF	20%	16V
C143	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C144	1-126-157-11	ELECT	10uF	20%	16V
C145	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C147	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C148	1-124-234-00	ELECT	22uF	20%	16V
C151	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C152	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C153	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C155	1-126-048-81	ELECT	10uF	20%	50V
C156	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C157	1-126-048-81	ELECT	10uF	20%	50V
C158	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C160	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C161	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C162	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C163	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C164	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C165	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C166	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C167	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C168	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C169	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C170	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C171	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C172	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C173	1-126-059-11	ELECT	10uF	20%	50V
C174	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C175	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C176	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C177	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C178	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C179	1-126-157-11	ELECT	10uF	20%	16V
C190	1-126-157-11	ELECT	10uF	20%	16V
C301	1-126-157-11	ELECT	10uF	20%	16V
C351	1-126-157-11	ELECT	10uF	20%	16V
C362	1-124-589-11	ELECT	47uF	20%	16V
C366	1-126-157-11	ELECT	10uF	20%	16V
C367	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C368	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C369	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C370	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C371	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C372	1-163-243-11	CERAMIC CHIP	33PF	5%	50V
C373	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C400	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C401	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C403	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C404	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
C405	1-164-232-11	CERAMIC CHIP	0.01uF		50V	D920	8-719-025-03	DIODE	RBA-402-SL		
C406	1-124-257-00	ELECT	2.2uF	20%	16V						
C407	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	D924	8-719-988-62	DIODE	1SS355		
C408	1-126-154-11	ELECT	47uF	20%	6.3V	D925	8-719-988-62	DIODE	1SS355		
C409	1-126-163-11	ELECT	4.7uF	20%	50V	D950	8-719-200-82	DIODE	11ES2		
C900	1-136-165-00	FILM	0.1uF	5%	50V	D951	8-719-200-82	DIODE	11ES2		
						D952	8-719-200-82	DIODE	11ES2		
C901	1-136-165-00	FILM	0.1uF	5%	50V						
C902	1-126-027-11	ELECT	1000uF	20%	25V	D953	8-719-978-94	DIODE	DTZ-TT11-30C		
C903	1-126-027-11	ELECT	1000uF	20%	25V	D954	8-719-976-99	DIODE	DTZ5.1B		
C904	1-126-008-51	ELECT	47uF	20%	16V	D955	8-719-200-82	DIODE	11ES2		
C905	1-126-009-81	ELECT	100uF	20%	16V						
									< IC >		
C906	1-126-048-81	ELECT	10uF	20%	50V	IC100	8-759-009-06	IC	MC14052BF		
C907	1-126-052-11	ELECT	100uF	20%	50V	IC111	8-759-460-02	IC	M62427FP-A		
C908	1-126-048-81	ELECT	10uF	20%	50V	IC361	8-759-450-88	IC	BU1922-E2 (AEP, UK, G, AED)		
C909	1-126-052-11	ELECT	100uF	20%	50V	IC400	8-759-493-73	IC	uPD780016YGF-021-3BA		
C920	1-136-165-00	FILM	0.1uF	5%	50V	IC401	8-759-165-80	IC	PST600C-T		
C921	1-119-873-21	ELECT	10000uF	20%	16V						
C922	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	IC920	8-759-701-75	IC	NJM7805FA		
C923	1-124-584-00	ELECT	100uF	20%	10V	IC921	8-759-701-75	IC	NJM7805FA		
C924	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V						
C925	1-126-051-11	ELECT	47uF	20%	50V				< JACK >		
C928	1-126-157-11	ELECT	10uF	20%	16V	J100	1-770-890-11	JACK, PIN 6P	(TAPE OUT, TAPE IN, GAME/VIDEO IN)		
C930	1-124-584-00	ELECT	100uF	20%	10V						
C931	1-126-008-51	ELECT	47uF	20%	16V						
C950	1-126-941-11	ELECT	470uF	20%	25V				< COIL >		
C951	1-126-949-11	ELECT	220uF	20%	35V						
						L360	1-412-039-51	INDUCTOR CHIP	100uH (AEP, UK, G, AED)		
C952	1-126-968-11	ELECT	100uF	20%	50V						
C953	1-126-964-11	ELECT	10uF	20%	50V				< TRANSISTOR >		
C954	1-126-964-11	ELECT	10uF	20%	50V						
C955	1-126-949-11	ELECT	220uF	20%	35V	Q110	8-729-107-43	TRANSISTOR	2SC3624-L18		
C956	1-107-818-11	DOUBLE LAYER	1F		5.5V	Q111	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
						Q112	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
C957	1-104-905-11	DOUBLE LAYER	0.22F		5.5V	Q113	8-729-107-43	TRANSISTOR	2SC3624-L18		
						Q114	8-729-424-59	TRANSISTOR	UN2212		
									< CONNECTOR >		
						Q160	8-729-107-43	TRANSISTOR	2SC3624-L18		
* CN101	1-568-854-11	SOCKET, CONNECTOR 11P				Q161	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
* CN112	1-568-949-11	PIN, CONNECTOR 11P				Q162	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
* CN200	1-564-520-11	PLUG, CONNECTOR 5P				Q163	8-729-107-43	TRANSISTOR	2SC3624-L18		
* CN400	1-568-862-11	SOCKET, CONNECTOR 19P				Q400	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
* CN401	1-568-862-11	SOCKET, CONNECTOR 19P									
						Q401	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
* CN402	1-565-561-11	PIN, CONNECTOR 3P (AU BUS)				Q402	8-729-424-59	TRANSISTOR	UN2212		
* CN900	1-564-522-11	PLUG, CONNECTOR 7P				Q403	8-729-424-12	TRANSISTOR	UN2112		
* CN920	1-564-520-11	PLUG, CONNECTOR 5P				Q900	8-729-018-60	TRANSISTOR	2SD2012-LC		
						Q902	8-729-018-60	TRANSISTOR	2SD2012-LC		
									< DIODE >		
						Q903	8-729-424-59	TRANSISTOR	UN2212		
D110	8-719-976-99	DIODE	DTZ5.1B			Q904	8-729-018-59	TRANSISTOR	2SB1375-LC		
D111	8-719-988-62	DIODE	1SS355			Q906	8-729-424-59	TRANSISTOR	UN2212		
D360	8-719-988-62	DIODE	1SS355 (AEP, UK, G, AED)			Q907	8-729-600-22	TRANSISTOR	2SA1235-F		
D401	8-719-988-62	DIODE	1SS355			Q908	8-729-202-67	FET	2SK246-GR3		
D402	8-719-988-62	DIODE	1SS355								
						Q909	8-729-424-14	TRANSISTOR	UN2112-TX		
D403	8-719-988-62	DIODE	1SS355			Q920	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
D404	8-719-988-62	DIODE	1SS355			Q921	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
D900	8-719-200-82	DIODE	11ES2			Q922	8-729-600-22	TRANSISTOR	2SA1235-F		
D901	8-719-200-82	DIODE	11ES2			Q950	8-729-018-59	TRANSISTOR	2SB1375-LC		
D902	8-719-200-82	DIODE	11ES2								
									< RESISTOR/CHIP CONDUCTOR >		
D903	8-719-200-82	DIODE	11ES2								
D904	8-719-977-31	DIODE	DTZ11A			R101	1-216-097-00	METAL CHIP	100K	5%	1/10W
D905	8-719-977-17	DIODE	DTZ7.5C			R102	1-216-025-00	METAL CHIP	100	5%	1/10W
D906	8-719-977-17	DIODE	DTZ7.5C			R103	1-216-049-11	METAL CHIP	1K	5%	1/10W

MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R104	1-216-097-00	METAL CHIP	100K 5% 1/10W	R175	1-216-065-00	METAL CHIP	4.7K 5% 1/10W
R105	1-216-073-00	METAL CHIP	10K 5% 1/10W	R176	1-216-065-00	METAL CHIP	4.7K 5% 1/10W
R106	1-216-097-00	METAL CHIP	100K 5% 1/10W	R177	1-216-049-11	METAL CHIP	1K 5% 1/10W
R107	1-216-097-00	METAL CHIP	100K 5% 1/10W	R178	1-216-073-00	METAL CHIP	10K 5% 1/10W
R108	1-216-049-11	METAL CHIP	1K 5% 1/10W	R179	1-216-049-11	METAL CHIP	1K 5% 1/10W
R109	1-216-097-00	METAL CHIP	100K 5% 1/10W	R190	1-216-073-00	METAL CHIP	10K 5% 1/10W
R110	1-216-049-11	METAL CHIP	1K 5% 1/10W	R191	1-216-045-00	METAL CHIP	680 5% 1/10W
R111	1-216-073-00	METAL CHIP	10K 5% 1/10W	R302	1-216-049-11	METAL CHIP	1K 5% 1/10W
R112	1-216-073-00	METAL CHIP	10K 5% 1/10W	R303	1-216-097-00	METAL CHIP	100K 5% 1/10W
R113	1-216-025-00	METAL CHIP	100 5% 1/10W	R304	1-216-073-00	METAL CHIP	10K 5% 1/10W
R114	1-216-089-00	METAL CHIP	47K 5% 1/10W	R305	1-216-073-00	METAL CHIP	10K 5% 1/10W
R115	1-216-089-00	METAL CHIP	47K 5% 1/10W	R330	1-216-073-00	METAL CHIP	10K 5% 1/10W
R116	1-216-049-11	METAL CHIP	1K 5% 1/10W	R331	1-216-073-00	METAL CHIP	10K 5% 1/10W
R117	1-216-049-11	METAL CHIP	1K 5% 1/10W	R332	1-216-073-00	METAL CHIP	10K 5% 1/10W
R118	1-216-097-00	METAL CHIP	100K 5% 1/10W	R333	1-216-073-00	METAL CHIP	10K 5% 1/10W
R120	1-216-121-00	METAL CHIP	1M 5% 1/10W	R352	1-216-049-11	METAL CHIP	1K 5% 1/10W
R121	1-216-111-00	METAL CHIP	390K 5% 1/10W	R353	1-216-097-00	METAL CHIP	100K 5% 1/10W
R122	1-216-081-00	METAL CHIP	22K 5% 1/10W	△ R360	1-249-405-11	CARBON	100 5% 1/4W F (AEP, UK, G, AED)
R123	1-216-057-00	METAL CHIP	2.2K 5% 1/10W	△ R365	1-249-397-11	CARBON	22 5% 1/4W F (AEP, UK, G, AED)
R124	1-216-097-00	METAL CHIP	100K 5% 1/10W	R366	1-216-025-00	METAL CHIP	100 5% 1/10W
R125	1-216-065-00	METAL CHIP	4.7K 5% 1/10W	R367	1-216-025-00	METAL CHIP	100 5% 1/10W
R126	1-216-065-00	METAL CHIP	4.7K 5% 1/10W	R368	1-216-049-00	METAL CHIP	1K 5% 1/10W (AEP, UK, G, AED)
R127	1-216-049-11	METAL CHIP	1K 5% 1/10W	R400	1-216-073-00	METAL CHIP	10K 5% 1/10W
R128	1-216-073-00	METAL CHIP	10K 5% 1/10W	R401	1-216-085-00	METAL CHIP	33K 5% 1/10W
R129	1-216-049-11	METAL CHIP	1K 5% 1/10W	R402	1-216-073-00	METAL CHIP	10K 5% 1/10W
R140	1-216-073-00	METAL CHIP	10K 5% 1/10W	R403	1-216-053-00	METAL CHIP	1.5K 5% 1/10W
R141	1-216-073-00	METAL CHIP	10K 5% 1/10W	R404	1-216-073-00	METAL CHIP	10K 5% 1/10W
R142	1-216-025-00	METAL CHIP	100 5% 1/10W	R405	1-216-049-11	METAL CHIP	1K 5% 1/10W
R143	1-216-025-00	METAL CHIP	100 5% 1/10W	R406	1-216-025-00	METAL CHIP	100 5% 1/10W
R144	1-216-025-00	METAL CHIP	100 5% 1/10W	R407	1-216-073-00	METAL CHIP	10K 5% 1/10W
R145	1-216-029-00	METAL CHIP	150 5% 1/10W	R408	1-216-025-00	METAL CHIP	100 5% 1/10W
R146	1-216-065-00	METAL CHIP	4.7K 5% 1/10W	R409	1-216-073-00	METAL CHIP	10K 5% 1/10W
R147	1-216-089-00	METAL CHIP	47K 5% 1/10W	R410	1-216-073-00	METAL CHIP	10K 5% 1/10W
R149	1-216-089-00	METAL CHIP	47K 5% 1/10W	R411	1-216-065-00	METAL CHIP	4.7K 5% 1/10W
R151	1-216-097-00	METAL CHIP	100K 5% 1/10W	R412	1-216-073-00	METAL CHIP	10K 5% 1/10W
R152	1-216-025-00	METAL CHIP	100 5% 1/10W	R413	1-216-001-00	METAL CHIP	10 5% 1/10W
R153	1-216-049-11	METAL CHIP	1K 5% 1/10W	R419	1-216-061-00	METAL CHIP	3.3K 5% 1/10W
R154	1-216-097-00	METAL CHIP	100K 5% 1/10W	R420	1-216-073-00	METAL CHIP	10K 5% 1/10W
R155	1-216-073-00	METAL CHIP	10K 5% 1/10W	R421	1-216-025-00	METAL CHIP	100 5% 1/10W
R156	1-216-097-00	METAL CHIP	100K 5% 1/10W	R422	1-216-025-00	METAL CHIP	100 5% 1/10W
R157	1-216-097-00	METAL CHIP	100K 5% 1/10W	R423	1-216-073-00	METAL CHIP	10K 5% 1/10W
R158	1-216-049-11	METAL CHIP	1K 5% 1/10W	R424	1-216-025-00	METAL CHIP	100 5% 1/10W
R159	1-216-097-00	METAL CHIP	100K 5% 1/10W	R425	1-216-073-00	METAL CHIP	10K 5% 1/10W
R160	1-216-049-11	METAL CHIP	1K 5% 1/10W	R426	1-216-025-00	METAL CHIP	100 5% 1/10W
R161	1-216-073-00	METAL CHIP	10K 5% 1/10W	R427	1-216-073-00	METAL CHIP	10K 5% 1/10W
R162	1-216-073-00	METAL CHIP	10K 5% 1/10W	R428	1-216-025-00	METAL CHIP	100 5% 1/10W
R163	1-216-025-00	METAL CHIP	100 5% 1/10W	R429	1-216-073-00	METAL CHIP	10K 5% 1/10W
R164	1-216-089-00	METAL CHIP	47K 5% 1/10W	R430	1-216-025-00	METAL CHIP	100 5% 1/10W
R165	1-216-089-00	METAL CHIP	47K 5% 1/10W	R431	1-216-025-00	METAL CHIP	100 5% 1/10W
R166	1-216-049-11	METAL CHIP	1K 5% 1/10W	R432	1-216-025-00	METAL CHIP	100 5% 1/10W
R167	1-216-049-11	METAL CHIP	1K 5% 1/10W	R433	1-216-025-00	METAL CHIP	100 5% 1/10W
R168	1-216-097-00	METAL CHIP	100K 5% 1/10W	R434	1-216-025-00	METAL CHIP	100 5% 1/10W
R170	1-216-121-00	METAL CHIP	1M 5% 1/10W	R435	1-216-025-00	METAL CHIP	100 5% 1/10W
R171	1-216-111-00	METAL CHIP	390K 5% 1/10W	R436	1-216-025-00	METAL CHIP	100 5% 1/10W
R172	1-216-081-00	METAL CHIP	22K 5% 1/10W	R437	1-216-025-00	METAL CHIP	100 5% 1/10W
R173	1-216-057-00	METAL CHIP	2.2K 5% 1/10W				
R174	1-216-097-00	METAL CHIP	100K 5% 1/10W				

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

MAIN

MECHA RELAY

MID SENS

MOTOR RELAY

OPEN/CLOSE SW

OUT SW

PANEL

Ref. No.	Part No.	Description			Remark
R438	1-216-073-00	METAL CHIP	10K	5%	1/10W
R439	1-216-073-00	METAL CHIP	10K	5%	1/10W
R440	1-216-073-00	METAL CHIP	10K	5%	1/10W
R441	1-216-073-00	METAL CHIP	10K	5%	1/10W
R445	1-216-049-11	METAL CHIP	1K	5%	1/10W
R446	1-216-115-00	METAL CHIP	560K	5%	1/10W
R447	1-216-025-91	METAL CHIP	100	5%	1/10W
R448	1-216-295-00	CONDUCTOR, CHIP (2012) (US, MY, SP, HK)			
R449	1-216-295-00	CONDUCTOR, CHIP (2012) (EXCEPT US)			
R450	1-216-295-00	CONDUCTOR, CHIP (2012) (EXCEPT US, JE)			
R451	1-216-295-00	CONDUCTOR, CHIP (2012) (MY, SP, HK, JE)			
R460	1-216-073-00	METAL CHIP	10K	5%	1/10W
△ R900	1-217-637-00	FUSIBLE	1	5%	1/4W F
△ R901	1-217-637-00	FUSIBLE	1	5%	1/4W F
△ R902	1-219-786-11	FUSIBLE	22	5%	1/4W F
△ R905	1-219-786-11	FUSIBLE	22	5%	1/4W F
△ R906	1-249-419-11	CARBON	1.5K	5%	1/4W F
R907	1-216-001-00	METAL CHIP	10	5%	1/10W
△ R908	1-219-786-11	FUSIBLE	22	5%	1/4W F
△ R909	1-249-419-11	CARBON	1.5K	5%	1/4W F
R910	1-216-001-00	METAL CHIP	10	5%	1/10W
R912	1-216-097-00	METAL CHIP	100K	5%	1/10W
R913	1-216-089-00	METAL CHIP	47K	5%	1/10W
R914	1-216-081-00	METAL CHIP	22K	5%	1/10W
△ R920	1-219-119-11	FUSIBLE	0.1	5%	1/4W F
R921	1-216-049-11	METAL CHIP	1K	5%	1/10W
R922	1-216-049-11	METAL CHIP	1K	5%	1/10W
R923	1-216-049-11	METAL CHIP	1K	5%	1/10W
R924	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R925	1-216-295-00	CONDUCTOR, CHIP (2012)			
R926	1-216-089-00	METAL CHIP	47K	5%	1/10W
R927	1-216-073-00	METAL CHIP	10K	5%	1/10W
R928	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
△ R950	1-219-119-11	FUSIBLE	0.1	5%	1/4W F
△ R951	1-249-429-11	CARBON	10K	5%	1/4W F
R952	1-216-073-00	METAL CHIP	10K	5%	1/10W
R953	1-216-041-00	METAL CHIP	470	5%	1/10W
R954	1-216-041-00	METAL CHIP	470	5%	1/10W
R1000	1-216-295-00	CONDUCTOR, CHIP (2012)			
< VIBRATOR >					
X360	1-579-900-21	VIBRATOR, CRYSTAL (4.332MHz)			
		(AEP, UK, G, AED)			
X400	1-760-489-11	VIBRATOR, CERAMIC (5MHz)			
X401	1-567-098-41	VIBRATOR, CRYSTAL (32.768MHz)			

*	1-667-396-11	MECHA RELAY BOARD			

< CONNECTOR >					
* CNP12	1-695-374-31	SOCKET, CONNECTOR 13P			
* CNP13	1-770-524-31	SOCKET, CONNECTOR 17P			
* CNP15	1-695-368-31	SOCKET, CONNECTOR 7P			

*	1-651-393-11	MID SENS BOARD			

	4-964-461-02	HOLDER (SENSOR)			

Ref. No.	Part No.	Description			Remark
< PHOTO INTERRUPTER >					
IC501	8-729-020-74	PHOTO INTERRUPTER GP1S24			

*	1-667-633-11	MOTOR RELAY BOARD			

< CAPACITOR >					
C4	1-101-005-00	CERAMIC	22000PF		50V
< CONNECTOR >					
* CNP19	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			

*	1-651-394-11	OPEN/CLOSE SW BOARD			

< CONNECTOR >					
CN512	1-506-481-11	PIN, CONNECTOR 2P			
* CN514	1-568-941-11	PIN, CONNECTOR 3P			
< RESISTOR >					
R503	1-249-408-11	CARBON	180	5%	1/4W F
R504	1-249-435-11	CARBON	33K	5%	1/4W
< SWITCH >					
SW505	1-571-300-21	SWITCH, ROTARY (TRAY OPEN/CLOSE DETECT)			

*	1-651-392-11	OUT SW BOARD			

< CONNECTOR >					
CN503	1-506-481-11	PIN, CONNECTOR 2P			
< SWITCH >					
SW504	1-692-193-11	SWITCH, PUSH (1 KEY) (MID)			

*	A-4403-366-A	PANEL BOARD, COMPLETE			

*	4-932-810-01	CUSHION (FL)			
*	4-954-701-01	HOLDER (FL TUBE)			
< CAPACITOR >					
C700	1-126-964-11	ELECT	10uF	20%	50V
C701	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C702	1-126-965-11	ELECT	22uF	20%	50V
C703	1-126-965-11	ELECT	22uF	20%	50V
C704	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C705	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C706	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C707	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C708	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C709	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C710	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C711	1-164-506-11	CERAMIC CHIP	4.7uF		16V

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

PANEL	PANEL-SW	RDS
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Ref. No.	Part No.	Description	Remark
C712	1-165-319-11	CERAMIC CHIP 0.1uF	50V
C713	1-165-319-11	CERAMIC CHIP 0.1uF	50V
C714	1-163-251-11	CERAMIC CHIP 100PF 5%	50V
C715	1-163-251-11	CERAMIC CHIP 100PF 5%	50V
C716	1-163-251-11	CERAMIC CHIP 100PF 5%	50V
C717	1-163-251-11	CERAMIC CHIP 100PF 5%	50V
C718	1-163-251-11	CERAMIC CHIP 100PF 5%	50V
C719	1-165-319-11	CERAMIC CHIP 0.1uF	50V
< CONNECTOR >			
* CN701	1-568-862-11	SOCKET, CONNECTOR 19P	
< DIODE >			
D701	8-719-058-04	LED SEL5223S-TP15 (DBFB)	
D702	8-719-057-97	LED SEL5923A-TP15 (GROOVE)	
D703	8-719-056-13	LED SML79423C-TP15 (CD1 ▲)	
D704	8-719-056-13	LED SML79423C-TP15 (CD2 ▲)	
D705	8-719-056-13	LED SML79423C-TP15 (CD3 ▲)	
< FLUORESCENT INDICATOR TUBE >			
FL700	1-517-691-11	INDICATOR TUBE, FLUORESCENT	
< IC >			
IC700	8-759-487-07	IC M66004M8FP-200D	
IC701	8-759-495-68	IC M66310FP-E2	
IC702	8-759-459-84	IC NJL56H400	
IC703	8-759-009-06	IC MC14052BF	
< TRANSISTOR >			
Q700	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q701	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
< RESISTOR >			
R701	1-216-037-00	METAL CHIP 330 5%	1/10W
R702	1-216-029-00	METAL CHIP 150 5%	1/10W
R703	1-216-029-00	METAL CHIP 150 5%	1/10W
R704	1-216-033-00	METAL CHIP 220 5%	1/10W
R705	1-216-029-00	METAL CHIP 150 5%	1/10W
R706	1-216-033-00	METAL CHIP 220 5%	1/10W
R707	1-216-029-00	METAL CHIP 150 5%	1/10W
R708	1-216-033-00	METAL CHIP 220 5%	1/10W
R709	1-216-049-11	METAL CHIP 1K 5%	1/10W
R710	1-216-073-00	METAL CHIP 10K 5%	1/10W
R711	1-216-073-00	METAL CHIP 10K 5%	1/10W
R712	1-216-049-11	METAL CHIP 1K 5%	1/10W
R713	1-216-073-00	METAL CHIP 10K 5%	1/10W
R714	1-216-073-00	METAL CHIP 10K 5%	1/10W
R715	1-216-049-11	METAL CHIP 1K 5%	1/10W
R716	1-216-049-11	METAL CHIP 1K 5%	1/10W
R717	1-216-097-00	METAL CHIP 100K 5%	1/10W
R718	1-216-097-00	METAL CHIP 100K 5%	1/10W
R719	1-216-049-11	METAL CHIP 1K 5%	1/10W
R720	1-216-049-11	METAL CHIP 1K 5%	1/10W
R721	1-216-085-00	METAL CHIP 33K 5%	1/10W
R722	1-216-051-00	METAL CHIP 1.2K 5%	1/10W
R723	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R724	1-216-051-00	METAL CHIP 1.2K 5%	1/10W
R725	1-216-057-00	METAL CHIP 2.2K 5%	1/10W

Ref. No.	Part No.	Description	Remark
R726	1-216-009-00	METAL CHIP 22 5%	1/10W
R727	1-216-049-11	METAL CHIP 1K 5%	1/10W
R728	1-216-061-00	METAL CHIP 3.3K 5%	1/10W
R729	1-216-061-00	METAL CHIP 3.3K 5%	1/10W
R730	1-216-061-00	METAL CHIP 3.3K 5%	1/10W
R731	1-216-049-11	METAL CHIP 1K 5%	1/10W
R732	1-216-097-00	METAL CHIP 100K 5%	1/10W
< SWITCH >			
S700	1-762-875-21	SWITCH, KEYBOARD (POWER)	
S701	1-762-875-21	SWITCH, KEYBOARD (DIMMER)	
S703	1-762-875-21	SWITCH, KEYBOARD (GROOVE)	
S704	1-762-875-21	SWITCH, KEYBOARD (DBFB)	
S705	1-762-875-21	SWITCH, KEYBOARD (CD1 ▲)	
S706	1-762-875-21	SWITCH, KEYBOARD (CD2 ▲)	
S707	1-762-875-21	SWITCH, KEYBOARD (CD3 ▲)	

* 1-667-076-11	PANEL-SW BOARD	*****	
< CONNECTOR >			
CN793	1-506-481-11	PIN, CONNECTOR 2P	
< SWITCH >			
S790	1-572-126-11	SWITCH, PUSH (1 KEY)	
		(CD DOOR CLOSE DETECT)	

RDS BOARD			

(Included in MAIN BOARD, COMPLETE)			
< CAPACITOR >			
C302	1-164-506-11	CERAMIC CHIP 4.7uF 16V	
C363	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C364	1-126-157-11	ELECT 10uF 20% 16V	(AEP, UK, G, AED)
< CONNECTOR >			
CN300	1-774-289-11	PIN, CONNECTOR (PC BOARD) 15P	
< IC >			
IC360	8-759-636-55	IC M5218AFP (AEP, UK, G, AED)	
< RESISTOR/CHIP CONDUCTOR >			
R361	1-216-079-00	METAL CHIP 18K 5%	1/10W (AEP, UK, G, AED)
R362	1-216-067-00	METAL CHIP 5.6K 5%	1/10W (AEP, UK, G, AED)
R363	1-216-097-00	METAL CHIP 100K 5%	1/10W (AEP, UK, G, AED)
R364	1-216-097-00	METAL CHIP 100K 5%	1/10W (AEP, UK, G, AED)
R371	1-216-295-00	CONDUCTOR, CHIP (2012) (AEP, UK, G, AED)	

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	1-667-071-11	REG 5V BOARD *****		JW21	1-216-296-00	CONDUCTOR, CHIP (3216)	
		< CAPACITOR >		JW22	1-216-296-00	CONDUCTOR, CHIP (3216)	
C934	1-165-319-11	CERAMIC CHIP 0.1uF	50V	JW23	1-216-296-00	CONDUCTOR, CHIP (3216)	
C935	1-165-319-11	CERAMIC CHIP 0.1uF	50V	JW24	1-216-296-00	CONDUCTOR, CHIP (3216)	
		< IC >		JW25	1-216-296-00	CONDUCTOR, CHIP (3216)	
IC922	8-759-701-75	IC NJM7805FA		JW27	1-216-296-00	CONDUCTOR, CHIP (3216)	
*****				JW28	1-216-296-00	CONDUCTOR, CHIP (3216)	
*	1-667-072-11	REG 7V BOARD *****		JW29	1-216-296-00	CONDUCTOR, CHIP (3216)	
		< CAPACITOR >		JW30	1-216-296-00	CONDUCTOR, CHIP (3216)	
C936	1-165-319-11	CERAMIC CHIP 0.1uF	50V	JW31	1-216-296-00	CONDUCTOR, CHIP (3216)	
C937	1-165-319-11	CERAMIC CHIP 0.1uF	50V	JW32	1-216-296-00	CONDUCTOR, CHIP (3216)	
		< IC >		JW33	1-216-296-00	CONDUCTOR, CHIP (3216)	
IC923	8-759-605-00	IC M5F78M07L		JW34	1-216-296-00	CONDUCTOR, CHIP (3216)	
*****				JW35	1-216-296-00	CONDUCTOR, CHIP (3216)	
*	A-4403-359-A	RM BOARD, COMPLETE *****		JW36	1-216-296-00	CONDUCTOR, CHIP (3216)	
		< CAPACITOR >		JW37	1-216-296-00	CONDUCTOR, CHIP (3216)	
C1	1-164-337-11	CERAMIC CHIP 2.2uF	16V	JW38	1-216-296-00	CONDUCTOR, CHIP (3216)	
C2	1-164-337-11	CERAMIC CHIP 2.2uF	16V	JW40	1-216-296-00	CONDUCTOR, CHIP (3216)	
C3	1-163-077-00	CERAMIC CHIP 0.1uF	10% 25V	JW41	1-216-296-00	CONDUCTOR, CHIP (3216)	
C5	1-164-337-11	CERAMIC CHIP 2.2uF	16V	JW42	1-216-296-00	CONDUCTOR, CHIP (3216)	
C6	1-163-077-00	CERAMIC CHIP 0.1uF	10% 25V	JW43	1-216-296-00	CONDUCTOR, CHIP (3216)	
C7	1-163-031-11	CERAMIC CHIP 0.01uF	50V	JW44	1-216-296-00	CONDUCTOR, CHIP (3216)	
C8	1-104-905-11	DOUBLE LAYER 0.22F	5.5V	JW45	1-216-296-00	CONDUCTOR, CHIP (3216)	
C14	1-164-161-11	CERAMIC CHIP 0.0022uF	10% 100V	JW46	1-216-296-00	CONDUCTOR, CHIP (3216)	
C15	1-164-161-11	CERAMIC CHIP 0.0022uF	10% 100V	JW47	1-216-296-00	CONDUCTOR, CHIP (3216)	
C16	1-164-161-11	CERAMIC CHIP 0.0022uF	10% 100V	JW48	1-216-296-00	CONDUCTOR, CHIP (3216)	
C17	1-164-161-11	CERAMIC CHIP 0.0022uF	10% 100V	JW49	1-216-296-00	CONDUCTOR, CHIP (3216)	
		< DIODE >		JW50	1-216-296-00	CONDUCTOR, CHIP (3216)	
D1	8-719-059-67	DIODE SID1003BQ-TP19		JW51	1-216-296-00	CONDUCTOR, CHIP (3216)	
D2	8-719-988-62	DIODE 1SS355		JW52	1-216-296-00	CONDUCTOR, CHIP (3216)	
D3	8-719-023-22	DIODE MA704A		JW53	1-216-296-00	CONDUCTOR, CHIP (3216)	
D4	8-719-988-62	DIODE 1SS355		JW54	1-216-296-00	CONDUCTOR, CHIP (3216)	
D5	8-719-988-62	DIODE 1SS355		JW55	1-216-296-00	CONDUCTOR, CHIP (3216)	
		< IC >		JW56	1-216-296-00	CONDUCTOR, CHIP (3216)	
IC1	8-759-480-93	IC MB89191PF-195		JW57	1-216-296-00	CONDUCTOR, CHIP (3216)	
		< CHIP CONDUCTOR >		JW58	1-216-296-00	CONDUCTOR, CHIP (3216)	
JW10	1-216-296-00	CONDUCTOR, CHIP (3216)		JW59	1-216-296-00	CONDUCTOR, CHIP (3216)	
JW11	1-216-296-00	CONDUCTOR, CHIP (3216)		JW60	1-216-296-00	CONDUCTOR, CHIP (3216)	
JW13	1-216-296-00	CONDUCTOR, CHIP (3216)		JW61	1-216-296-00	CONDUCTOR, CHIP (3216)	
JW14	1-216-296-00	CONDUCTOR, CHIP (3216)		JW62	1-216-296-00	CONDUCTOR, CHIP (3216)	
JW17	1-216-296-00	CONDUCTOR, CHIP (3216)		JW63	1-216-296-00	CONDUCTOR, CHIP (3216)	
JW18	1-216-296-00	CONDUCTOR, CHIP (3216)		JW65	1-216-296-00	CONDUCTOR, CHIP (3216)	
JW19	1-216-296-00	CONDUCTOR, CHIP (3216)		JW66	1-216-296-00	CONDUCTOR, CHIP (3216)	
JW20	1-216-296-00	CONDUCTOR, CHIP (3216)		JW67	1-216-296-00	CONDUCTOR, CHIP (3216)	
				JW68	1-216-296-00	CONDUCTOR, CHIP (3216)	
				JW69	1-216-296-00	CONDUCTOR, CHIP (3216)	
				JW70	1-216-296-00	CONDUCTOR, CHIP (3216)	
				JW71	1-216-296-00	CONDUCTOR, CHIP (3216)	
				JW72	1-216-296-00	CONDUCTOR, CHIP (3216)	
				JW73	1-216-296-00	CONDUCTOR, CHIP (3216)	
				JW74	1-216-296-00	CONDUCTOR, CHIP (3216)	
				JW75	1-216-296-00	CONDUCTOR, CHIP (3216)	
				JW76	1-216-296-00	CONDUCTOR, CHIP (3216)	
				JW77	1-216-296-00	CONDUCTOR, CHIP (3216)	
				JW78	1-216-296-00	CONDUCTOR, CHIP (3216)	

Ref. No.	Part No.	Description	Remark				Ref. No.	Part No.	Description	Remark			
< TRANSISTOR >							S2	1-762-875-21	SWITCH, KEYBOARD (PRESET EQ)				
Q1	8-729-041-50	TRANSISTOR	2SD2444KT146				S3	1-762-875-21	SWITCH, KEYBOARD (TIMER SET)				
Q2	8-729-424-08	TRANSISTOR	UN2111				S4	1-762-875-21	SWITCH, KEYBOARD (TIMER SELECT)				
Q3	8-729-120-28	TRANSISTOR	2SC1623-L5L6				S5	1-762-875-21	SWITCH, KEYBOARD (MANUAL, CONTINU)				
Q4	8-729-120-28	TRANSISTOR	2SC1623-L5L6				S6	1-762-875-21	SWITCH, KEYBOARD (AUTO, SHUFFLE)				
Q5	8-729-600-22	TRANSISTOR	2SA1235-F				S7	1-762-875-21	SWITCH, KEYBOARD (PRESET, PROGRAM)				
Q6	8-729-120-28	TRANSISTOR	2SC1623-L5L6				S8	1-762-875-21	SWITCH, KEYBOARD (STEREO/MONO, REPEAT)				
< RESISTOR >							S9	1-762-875-21	SWITCH, KEYBOARD (EDIT/NO)				
							S10	1-762-875-21	SWITCH, KEYBOARD (ENTER/YES)				
R1	1-216-025-00	METAL CHIP	100	5%	1/10W		S11	1-762-875-21	SWITCH, KEYBOARD (TAPE)				
R2	1-216-134-00	METAL CHIP	2.2	5%	1/8W		S12	1-762-875-21	SWITCH, KEYBOARD (MD)				
R3	1-216-049-11	METAL CHIP	1K	5%	1/10W		S13	1-762-875-21	SWITCH, KEYBOARD (CD)				
R4	1-216-049-11	METAL CHIP	1K	5%	1/10W		S14	1-762-875-21	SWITCH, KEYBOARD (BAND, TUNER)				
R5	1-216-097-00	METAL CHIP	100K	5%	1/10W		S15	1-762-875-21	SWITCH, KEYBOARD (FUNCTION)				
R6	1-216-073-00	METAL CHIP	10K	5%	1/10W		S16	1-762-875-21	SWITCH, KEYBOARD (DISP)				
R7	1-216-073-00	METAL CHIP	10K	5%	1/10W		S17	1-762-875-21	SWITCH, KEYBOARD (◀◀)				
R8	1-216-073-00	METAL CHIP	10K	5%	1/10W		S18	1-762-875-21	SWITCH, KEYBOARD (▶▶)				
R9	1-216-134-00	METAL CHIP	2.2	5%	1/8W		S19	1-762-875-21	SWITCH, KEYBOARD (MD/CD 1)				
R10	1-216-049-11	METAL CHIP	1K	5%	1/10W		S20	1-762-875-21	SWITCH, KEYBOARD (MD/CD 2)				
R11	1-216-049-11	METAL CHIP	1K	5%	1/10W		S21	1-762-875-21	SWITCH, KEYBOARD (MD/CD 3)				
R12	1-216-049-11	METAL CHIP	1K	5%	1/10W		S22	1-762-875-21	SWITCH, KEYBOARD (▶II)				
R13	1-216-049-11	METAL CHIP	1K	5%	1/10W		S23	1-762-875-21	SWITCH, KEYBOARD (■)				
R14	1-216-081-00	METAL CHIP	22K	5%	1/10W		S24	1-762-875-21	SWITCH, KEYBOARD (CD LOOP)				
R15	1-216-073-00	METAL CHIP	10K	5%	1/10W		S25	1-762-875-21	SWITCH, KEYBOARD (DISK SKIP)				
R16	1-216-081-00	METAL CHIP	22K	5%	1/10W		S26	1-762-875-21	SWITCH, KEYBOARD (REC IT)				
R17	1-216-073-00	METAL CHIP	10K	5%	1/10W		S27	1-762-875-21	SWITCH, KEYBOARD (REC/CD-MD SYNC)				
R20	1-216-049-11	METAL CHIP	1K	5%	1/10W		< VIBRATOR >						
R21	1-216-049-11	METAL CHIP	1K	5%	1/10W		X1	1-767-723-11	VIBRATOR, CERAMIC (3MHz)				
R22	1-216-049-11	METAL CHIP	1K	5%	1/10W		*****						
R23	1-216-049-11	METAL CHIP	1K	5%	1/10W		*	1-667-081-11	SP BOARD				
R24	1-216-049-11	METAL CHIP	1K	5%	1/10W		*****						
R25	1-216-049-11	METAL CHIP	1K	5%	1/10W		< CAPACITOR >						
R26	1-216-049-11	METAL CHIP	1K	5%	1/10W		C109	1-136-153-00	FILM	0.01uF	5%	50V	
R30	1-216-097-00	METAL CHIP	100K	5%	1/10W		C110	1-136-153-00	FILM	0.01uF	5%	50V	
R31	1-216-097-00	METAL CHIP	100K	5%	1/10W		C159	1-136-153-00	FILM	0.01uF	5%	50V	
R32	1-216-097-00	METAL CHIP	100K	5%	1/10W		C160	1-136-153-00	FILM	0.01uF	5%	50V	
R33	1-216-097-00	METAL CHIP	100K	5%	1/10W		< CONNECTOR >						
R34	1-216-097-00	METAL CHIP	100K	5%	1/10W		* CN109	1-564-519-11	PLUG, CONNECTOR 4P				
R35	1-216-097-00	METAL CHIP	100K	5%	1/10W		< RESISTOR >						
R36	1-216-097-00	METAL CHIP	100K	5%	1/10W		R110	1-260-076-11	CARBON	10	5%	1/2W	
R37	1-216-097-00	METAL CHIP	100K	5%	1/10W		R160	1-260-076-11	CARBON	10	5%	1/2W	
R38	1-216-121-00	METAL CHIP	1M	5%	1/10W		< TERMINAL >						
R39	1-216-113-00	METAL CHIP	470K	5%	1/10W		TB109	1-537-822-31	TERMINAL BOARD (SPEAKER)				
R40	1-216-121-00	METAL CHIP	1M	5%	1/10W		*****						
R41	1-216-113-00	METAL CHIP	470K	5%	1/10W		*	A-4403-375-A	SUB BOARD, COMPLETE				
R42	1-216-073-00	METAL CHIP	10K	5%	1/10W		*****						
R43	1-216-073-00	METAL CHIP	10K	5%	1/10W		< CAPACITOR >						
R44	1-216-073-00	METAL CHIP	10K	5%	1/10W		C500	1-162-306-11	CERAMIC	0.01uF	20%	16V	
R45	1-216-073-00	METAL CHIP	10K	5%	1/10W		C501	1-164-159-11	CERAMIC	0.1uF		50V	
R46	1-216-073-00	METAL CHIP	10K	5%	1/10W		C502	1-162-306-11	CERAMIC	0.01uF	20%	16V	
< ROTARY ENCODER >							< CAPACITOR >						
RV1	1-475-347-11	ENCODER, ROTARY (MULTI JOG)					< CAPACITOR >						
RV2	1-475-347-11	ENCODER, ROTARY (VOLUME)					< CAPACITOR >						
< SWITCH >							< CAPACITOR >						
S1	1-762-875-21	SWITCH, KEYBOARD (POWER)					< CAPACITOR >						

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C503	1-162-286-31	CERAMIC	220PF 10%	50V	Q910	8-729-119-76	TRANSISTOR 2SA1175-HFE
C504	1-164-159-11	CERAMIC	0.1uF	50V	Q911	8-729-620-05	TRANSISTOR 2SC2603-EF
C505	1-126-160-11	ELECT	1uF 20%	50V	Q912	8-729-018-59	TRANSISTOR 2SB1375-LC
C506	1-164-159-11	CERAMIC	0.1uF	50V	< RESISTOR >		
C507	1-124-584-00	ELECT	100uF 20%	10V	R501	1-247-807-31	CARBON 100 5% 1/4W
C508	1-164-159-11	CERAMIC	0.1uF	50V	R502	1-247-807-31	CARBON 100 5% 1/4W
C509	1-164-159-11	CERAMIC	0.1uF	50V	R503	1-247-807-31	CARBON 100 5% 1/4W
C510	1-162-306-11	CERAMIC	0.01uF 20%	16V	R504	1-247-807-31	CARBON 100 5% 1/4W
C511	1-164-159-11	CERAMIC	0.1uF	50V	R505	1-247-807-31	CARBON 100 5% 1/4W
C560	1-124-584-00	ELECT	100uF 20%	10V	R506	1-249-417-11	CARBON 1K 5% 1/4W
C600	1-124-584-00	ELECT	100uF 20%	10V	R507	1-249-417-11	CARBON 1K 5% 1/4W
C601	1-164-159-11	CERAMIC	0.1uF	50V	R508	1-247-807-31	CARBON 100 5% 1/4W
C602	1-164-159-11	CERAMIC	0.1uF	50V	R509	1-249-417-11	CARBON 1K 5% 1/4W
C611	1-162-306-11	CERAMIC	0.01uF 20%	16V	R512	1-249-441-11	CARBON 100K 5% 1/4W
C613	1-164-159-11	CERAMIC	0.1uF	50V	R514	1-247-807-31	CARBON 100 5% 1/4W
C620	1-127-550-11	ELECT(SOLID)	3.3uF 20%	16V	R516	1-247-807-31	CARBON 100 5% 1/4W
C621	1-124-584-00	ELECT	100uF 20%	10V	R517	1-247-807-31	CARBON 100 5% 1/4W
C622	1-124-584-00	ELECT	100uF 20%	10V	R518	1-247-807-31	CARBON 100 5% 1/4W
C623	1-164-159-11	CERAMIC	0.1uF	50V	R519	1-249-417-11	CARBON 1K 5% 1/4W
C642	1-164-159-11	CERAMIC	0.1uF	50V	R523	1-249-435-11	CARBON 33K 5% 1/4W
C644	1-102-518-11	CERAMIC	33PF 5%	50V	R524	1-249-439-11	CARBON 68K 5% 1/4W
C910	1-126-160-11	ELECT	1uF 20%	50V	R526	1-249-429-11	CARBON 10K 5% 1/4W
< CONNECTOR >				R530	1-247-807-31	CARBON 100 5% 1/4W	
* CN100	1-568-854-11	SOCKET, CONNECTOR 11P		R531	1-247-807-31	CARBON 100 5% 1/4W	
* CN500	1-568-865-11	SOCKET, CONNECTOR 23P		R532	1-247-807-31	CARBON 100 5% 1/4W	
CN501	1-568-860-11	SOCKET, CONNECTOR 17P		R533	1-247-807-31	CARBON 100 5% 1/4W	
CN600	1-691-652-11	SOCKET, CONNECTOR 23P		R534	1-247-807-31	CARBON 100 5% 1/4W	
CN601	1-691-649-11	SOCKET, CONNECTOR 17P		R535	1-247-807-31	CARBON 100 5% 1/4W	
* CN640	1-568-862-11	SOCKET, CONNECTOR 19P		R536	1-249-429-11	CARBON 10K 5% 1/4W	
* CN911	1-564-519-11	PLUG, CONNECTOR 4P		R537	1-249-429-11	CARBON 10K 5% 1/4W	
* CN912	1-564-518-11	PLUG, CONNECTOR 3P		R538	1-249-429-11	CARBON 10K 5% 1/4W	
< DIODE >				R539	1-249-429-11	CARBON 10K 5% 1/4W	
D560	8-719-010-38	DIODE UZ-5.1BSB		R540	1-249-429-11	CARBON 10K 5% 1/4W	
D561	8-719-010-38	DIODE UZ-5.1BSB		R541	1-249-429-11	CARBON 10K 5% 1/4W	
D910	8-719-010-77	DIODE UZ-13BSA-TP		R542	1-249-417-11	CARBON 1K 5% 1/4W	
D911	8-719-987-63	DIODE 1N4148M		R543	1-247-807-31	CARBON 100 5% 1/4W	
< IC >				R545	1-247-807-31	CARBON 100 5% 1/4W	
IC500	8-759-496-64	IC uPD78078GF-075-3BA		R546	1-247-807-31	CARBON 100 5% 1/4W	
IC501	8-759-481-02	IC M62016L		R547	1-247-807-31	CARBON 100 5% 1/4W	
IC502	8-759-269-08	IC SN74HCT04AN		R548	1-249-429-11	CARBON 10K 5% 1/4W	
IC560	8-759-277-68	IC LB1648		R550	1-249-441-11	CARBON 100K 5% 1/4W	
IC600	8-759-480-97	IC uPD784215GF-501-3BA		R551	1-247-887-00	CARBON 220K 5% 1/4W	
IC601	8-759-463-99	IC M5M5256DFP-70XL		R552	1-249-441-11	CARBON 100K 5% 1/4W	
IC641	8-759-927-72	IC TL1591CP		R553	1-249-429-11	CARBON 10K 5% 1/4W	
< TRANSISTOR >				R560	1-247-807-31	CARBON 100 5% 1/4W	
Q500	8-729-422-73	TRANSISTOR UN4212		R561	1-247-807-31	CARBON 100 5% 1/4W	
Q501	8-729-620-05	TRANSISTOR 2SC2603-EF		R570	1-249-441-11	CARBON 100K 5% 1/4W	
Q600	8-729-422-73	TRANSISTOR UN4212		R571	1-249-441-11	CARBON 100K 5% 1/4W	
Q601	8-729-422-73	TRANSISTOR UN4212		R572	1-249-441-11	CARBON 100K 5% 1/4W	
Q602	8-729-118-01	TRANSISTOR 2SB1116		R573	1-249-441-11	CARBON 100K 5% 1/4W	
Q603	8-729-118-01	TRANSISTOR 2SB1116		R574	1-249-441-11	CARBON 100K 5% 1/4W	
Q604	8-729-900-63	TRANSISTOR DTA124ES		R575	1-249-441-11	CARBON 100K 5% 1/4W	
Q605	8-729-900-89	TRANSISTOR DTC144ES		R576	1-249-441-11	CARBON 100K 5% 1/4W	
Q641	8-729-620-05	TRANSISTOR 2SC2603-EF		R577	1-249-441-11	CARBON 100K 5% 1/4W	
				R610	1-249-429-11	CARBON 10K 5% 1/4W	
				R611	1-249-429-11	CARBON 10K 5% 1/4W	
				R612	1-249-429-11	CARBON 10K 5% 1/4W	

SUB	SW	TRANS-A	TRANS-B	TRAY MOTOR	U/D MOTOR
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Ref. No.	Part No.	Description			Remark
R613	1-249-429-11	CARBON	10K	5%	1/4W
R614	1-249-429-11	CARBON	10K	5%	1/4W
R615	1-249-429-11	CARBON	10K	5%	1/4W
R616	1-249-429-11	CARBON	10K	5%	1/4W
R617	1-249-429-11	CARBON	10K	5%	1/4W
R618	1-247-807-31	CARBON	100	5%	1/4W
R619	1-247-807-31	CARBON	100	5%	1/4W
R620	1-247-807-31	CARBON	100	5%	1/4W
R621	1-247-807-31	CARBON	100	5%	1/4W
R622	1-249-417-11	CARBON	1K	5%	1/4W
R624	1-249-429-11	CARBON	10K	5%	1/4W
R626	1-247-807-31	CARBON	100	5%	1/4W
R627	1-247-807-31	CARBON	100	5%	1/4W
R630	1-249-441-11	CARBON	100K	5%	1/4W
R631	1-249-441-11	CARBON	100K	5%	1/4W
R632	1-249-441-11	CARBON	100K	5%	1/4W
R633	1-249-441-11	CARBON	100K	5%	1/4W
R634	1-249-441-11	CARBON	100K	5%	1/4W
R636	1-249-441-11	CARBON	100K	5%	1/4W
R637	1-249-441-11	CARBON	100K	5%	1/4W
R638	1-249-441-11	CARBON	100K	5%	1/4W
R642	1-247-843-11	CARBON	3.3K	5%	1/4W
R645	1-249-429-11	CARBON	10K	5%	1/4W
R646	1-249-436-11	CARBON	39K	5%	1/4W
R647	1-249-427-11	CARBON	6.8K	5%	1/4W
R648	1-249-413-11	CARBON	470	5%	1/4W
R650	1-247-807-31	CARBON	100	5%	1/4W
R651	1-247-807-31	CARBON	100	5%	1/4W
R652	1-249-421-11	CARBON	2.2K	5%	1/4W
R653	1-249-421-11	CARBON	2.2K	5%	1/4W
R655	1-249-429-11	CARBON	10K	5%	1/4W
R660	1-247-807-31	CARBON	100	5%	1/4W
R661	1-247-807-31	CARBON	100	5%	1/4W
R662	1-247-807-31	CARBON	100	5%	1/4W
R663	1-247-807-31	CARBON	100	5%	1/4W
R664	1-247-807-31	CARBON	100	5%	1/4W
R665	1-247-807-31	CARBON	100	5%	1/4W
R666	1-247-807-31	CARBON	100	5%	1/4W
R667	1-247-807-31	CARBON	100	5%	1/4W
R668	1-247-807-31	CARBON	100	5%	1/4W
R669	1-247-807-31	CARBON	100	5%	1/4W
R670	1-247-807-31	CARBON	100	5%	1/4W
R671	1-247-807-31	CARBON	100	5%	1/4W
R672	1-247-807-31	CARBON	100	5%	1/4W
R673	1-247-807-31	CARBON	100	5%	1/4W
R674	1-247-807-31	CARBON	100	5%	1/4W
R675	1-247-807-31	CARBON	100	5%	1/4W
R677	1-247-807-31	CARBON	100	5%	1/4W
R678	1-247-807-31	CARBON	100	5%	1/4W
R679	1-247-807-31	CARBON	100	5%	1/4W
R680	1-247-807-31	CARBON	100	5%	1/4W
R681	1-247-807-31	CARBON	100	5%	1/4W
R682	1-247-807-31	CARBON	100	5%	1/4W
R683	1-247-807-31	CARBON	100	5%	1/4W
R684	1-247-807-31	CARBON	100	5%	1/4W
R685	1-247-807-31	CARBON	100	5%	1/4W
R915	1-249-441-11	CARBON	100K	5%	1/4W

Ref. No.	Part No.	Description			Remark
R916	1-249-441-11	CARBON	100K	5%	1/4W
△ R917	1-249-419-11	CARBON	1.5K	5%	1/4W F
△ R918	1-219-786-11	FUSIBLE	22	5%	1/4W F
< VIBRATOR >					
X500	1-760-489-11	VIBRATOR, CERAMIC (5MHz)			
X600	1-767-661-11	VIBRATOR, CERAMIC (12.5MHz)			

*	1-667-392-11	SW BOARD			

< CONNECTOR >					
* CN206	1-750-494-31	PIN, CONNECTOR (PC BOARD) 6P			
< SWITCH >					
S681	1-572-467-61	SWITCH, PUSH (1 KEY) (LIMIT-IN)			
S682	1-692-377-31	SWITCH, PUSH (1 KEY) (REFLECT)			
S683	1-692-847-21	SWITCH, PUSH (1 KEY) (PROTECT)			

*	1-667-079-11	TRANS-A BOARD			

	1-533-293-11	FUSE HOLDER			
< CONNECTOR >					
* CN992	1-580-230-31	PIN, CONNECTOR (PC BOARD) 2P			
< FUSE >					
△ F990	1-532-464-31	FUSE, TIME-LAG (2.5A/250V) (MY, SP, HK, JE)			
< SWITCH >					
△ S990	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (VOLTAGE SELECTOR) (MY, SP, HK, JE)			

*	1-667-080-11	TRANS-B BOARD			

< CONNECTOR >					
* CN990	1-564-522-11	PLUG, CONNECTOR 7P			
* CN991	1-564-518-11	PLUG, CONNECTOR 3P			

*	1-651-391-11	TRAY MOTOR BOARD			

< CAPACITOR >					
C502	1-164-159-11	CERAMIC	0.1uF	50V	

*	1-651-396-11	U/D MOTOR BOARD			

< CAPACITOR >					
C501	1-164-159-11	CERAMIC	0.1uF	50V	

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS *****		#6	7-627-553-17	PRECISION SCREW +P 2X2 TYPE 3	
				#7	7-685-853-04	SCREW +BVTT 2X6 (S)	
				#8	7-621-255-20	SCREW +BVTT 2X4 (S)	
				#9	7-627-000-00	SCREW,PRECISION +P1.7X2.2TYPE3	
				#10	7-627-852-08	SCREW,PRECISION +P 1.7X2.5	
				#11	7-627-852-28	+P 1.7X3	
				#12	7-685-871-01	SCREW +BVTT 3X6 (S)	
				#13	7-621-775-00	SCREW +B 2.6X3	
				#14	7-621-773-86	SCREW +B 2.6X4	
				#15	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	
				#16	7-621-255-15	SCREW +P 2X3	
				#17	7-685-102-19	SCREW +P 2X4 TYPE2 NON-SLIT	
				#18	7-624-106-04	STOP RING 3.0, TYPE-E	
				#19	7-624-102-04	STOP RING 1.5, TYPE-E	
				#20	7-682-562-09	SCREW +B 4X10	
				#21	7-684-024-04	N 4, TYPE 2	
				#22	7-685-903-11	+PTPWH 3X6 (TYPE 2)	
13	1-773-116-11	WIRE (FLAT TYPE) (19 CORE) (170 mm)					
51	1-782-938-11	WIRE (FLAT TYPE) (23 CORE) (200 mm)					
57	1-782-937-11	WIRE (FLAT TYPE) (17 CORE) (130 mm)					
59	1-769-937-11	WIRE (FLAT TYPE) (11 CORE)					
60	1-773-105-11	WIRE (FLAT TYPE) (19 CORE) (70 mm)					
62	1-233-544-21	ENCAPSULATED COMPONENT (FM/AM TUNER UNIT) (US)					
62	1-233-546-21	ENCAPSULATED COMPONENT (FM/AM TUNER UNIT) (MY, SP, HK, JE)					
62	1-693-387-21	TUNER (FM/MW/LW) (AEP, UK, G, AED)					
63	1-782-940-11	WIRE (FLAT TYPE) (17 CORE) (200 mm)					
64	1-782-941-11	WIRE (FLAT TYPE) (23 CORE) (230 mm)					
△ 66	1-558-943-41	CORD, POWER (JE)					
△ 66	1-575-042-21	CORD, POWER (US)					
△ 66	1-575-651-21	CORD, POWER (AEP, G, AED, MY, SP, HK)					
△ 66	1-696-571-11	CORD, POWER (UK)					
△ 74	1-569-007-11	ADAPTOR, CONVERSION 2P (JE)					
△ 74	1-569-008-11	ADAPTOR, CONVERSION 2P (MY, SP)					
△ 74	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (HK)					
75	1-543-798-11	FILTER, CLAMP (FERRITE CORE)					
110	1-782-910-11	WIRE (FLAT TYPE) (7 CORE)					
164	1-667-955-11	FLEXIBLE BOARD					
169	1-782-909-11	WIRE (FLAT TYPE) (13 CORE)					
△ 203	8-583-028-02	OPTICAL PICK-UP KMS-260A/J1N (for MD)					
204	1-664-039-11	OP TRANSLATION FLEXIBLE BOARD					
319	1-452-719-11	MAGNET ASSY					
△ 351	8-848-379-31	OPTICAL PICK-UP KSS-213BA/F-NP (for CD)					
352	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)					
HR901	1-500-489-11	HEAD, OVER WRITE					
M101	X-4917-523-4	MOTOR ASSY (SPINDLE)					
M102	X-4917-504-1	MOTOR ASSY (SLED)					
M501	X-4949-299-1	MOTOR ASSY (CDM48 U/D) (ELEVATOR UP/DOWN)					
M502	X-4944-463-1	MOTOR ASSY (LOADING)					
M901	A-4672-241-A	MOTOR ASSY, SPINDLE					
M902	A-4672-240-A	MOTOR ASSY, SLED					
M903	1-698-874-11	MOTOR, DC (LOADING)					
M904	1-698-874-11	MOTOR, DC (ELEVATOR UP/DOWN)					
M905	X-4949-160-1	MOTOR (HEAD) ASSY (OVER WRITE HEAD UP/DOWN)					
M910	1-698-997-11	FAN, DC					
S10	1-762-904-11	SWITCH, PUSH (1 KEY) (LOADING IN DETECT)					
S11	1-762-952-11	SWITCH, PUSH (1 KEY) (LOADING OUT DETECT)					
△ T990	1-431-513-11	TRANSFORMER, POWER (AEP, UK, G, AED)					
△ T990	1-431-514-11	TRANSFORMER, POWER (US)					
△ T990	1-431-515-11	TRANSFORMER, POWER (MY, SP, HK, JE)					

HARDWARE LIST							

#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S					
#2	7-685-872-09	SCREW +BVTT 3X8 (S)					
#3	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3					
#4	7-685-861-01	SCREW +BVTT 2.6X5 (S)					
#5	7-685-103-19	SCREW +P 2X5 TYPE2 NON-SLIT					

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

HCD-MD515

RM-MD515

SONY®

SERVICE MANUAL

US Model
AEP Model
UK Model
E Model
Tourist Model

SUPPLEMENT-1

File this supplement with the service manual.

Subject: 1. Block Diagrams
2. Board Modification and Correction

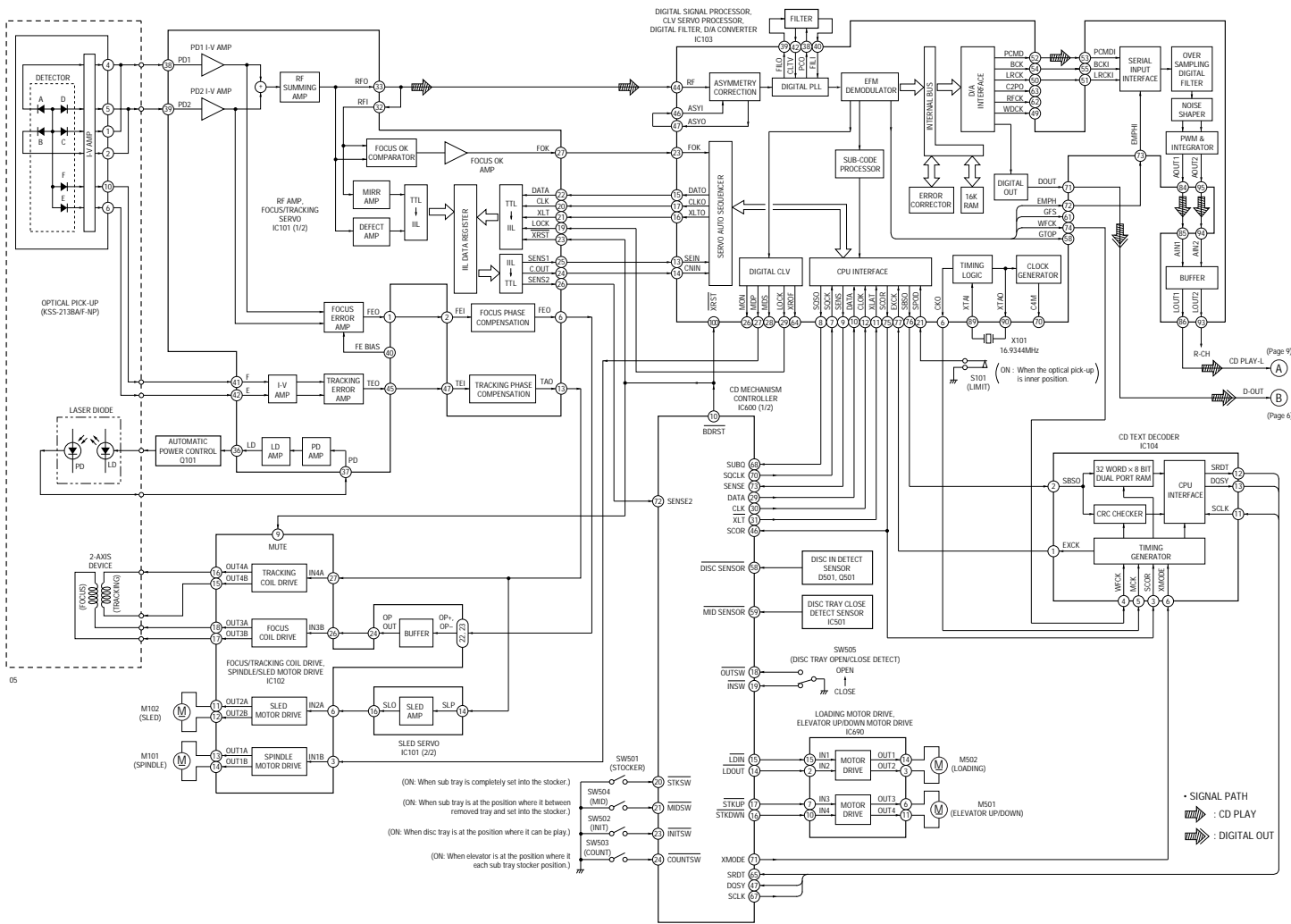
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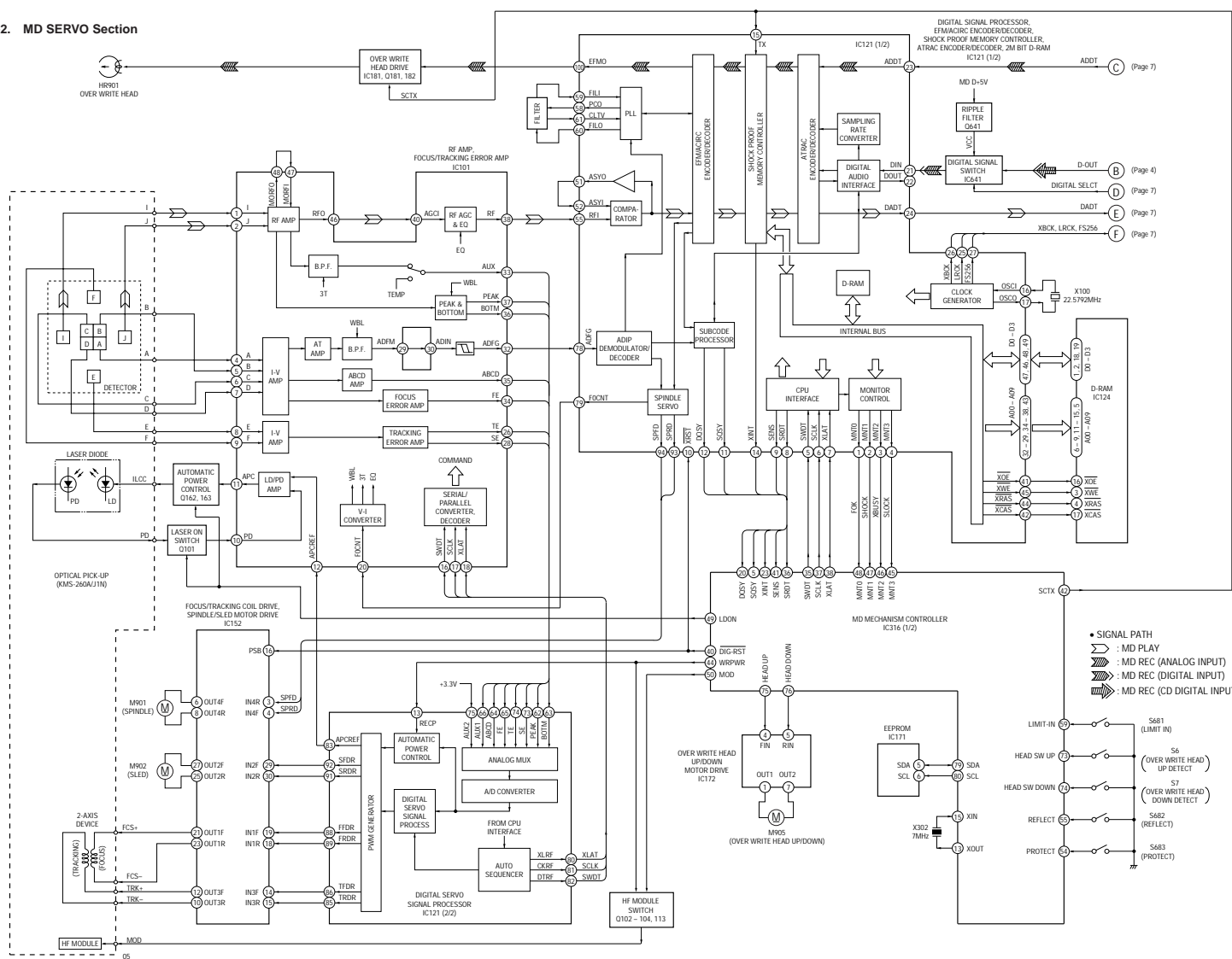
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HCD-MD515
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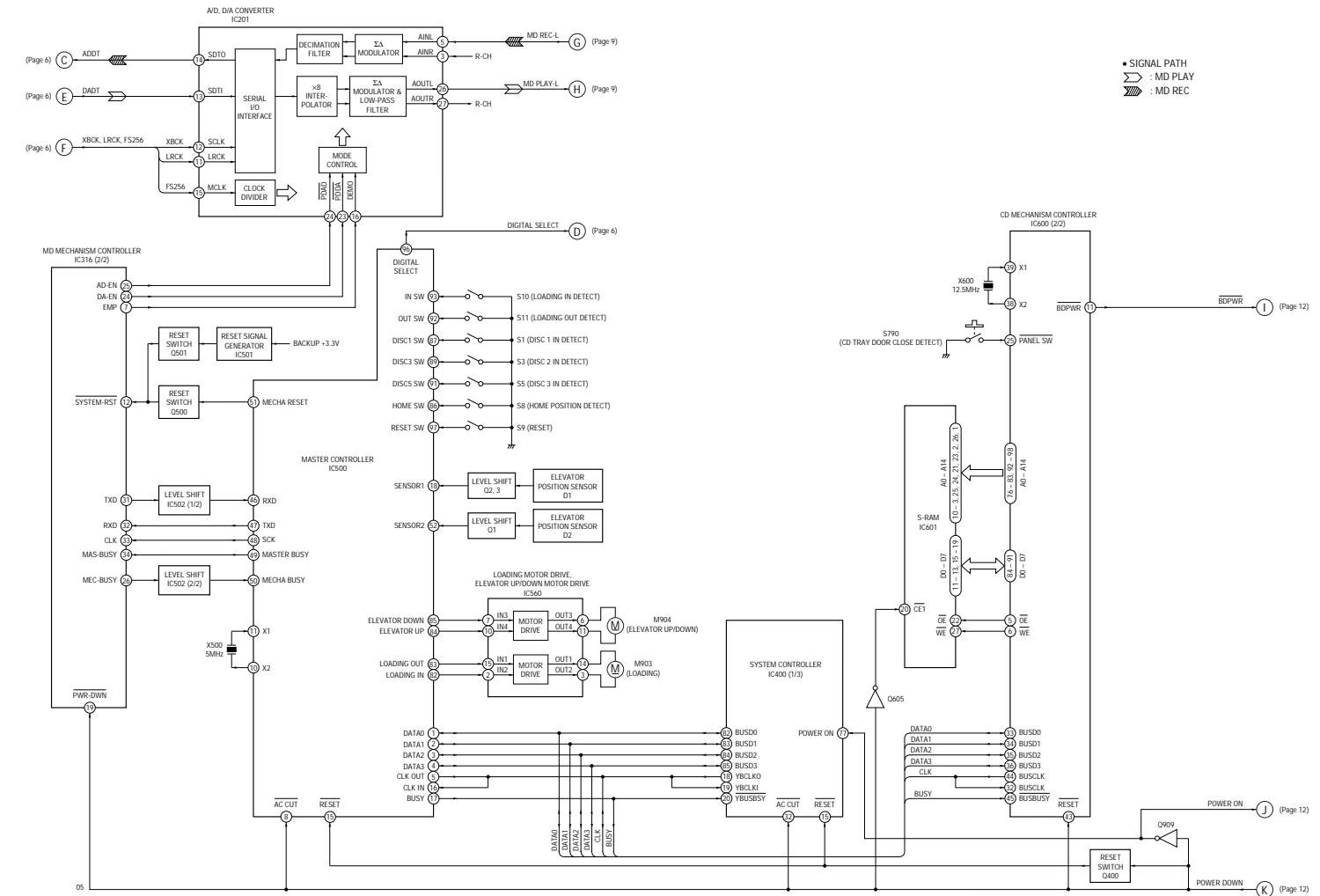
1. BLOCK DIAGRAMS
1-1. CD SERVO Section





HCD-MD515
RM-MD515

1-3. MAIN Section (1/2)

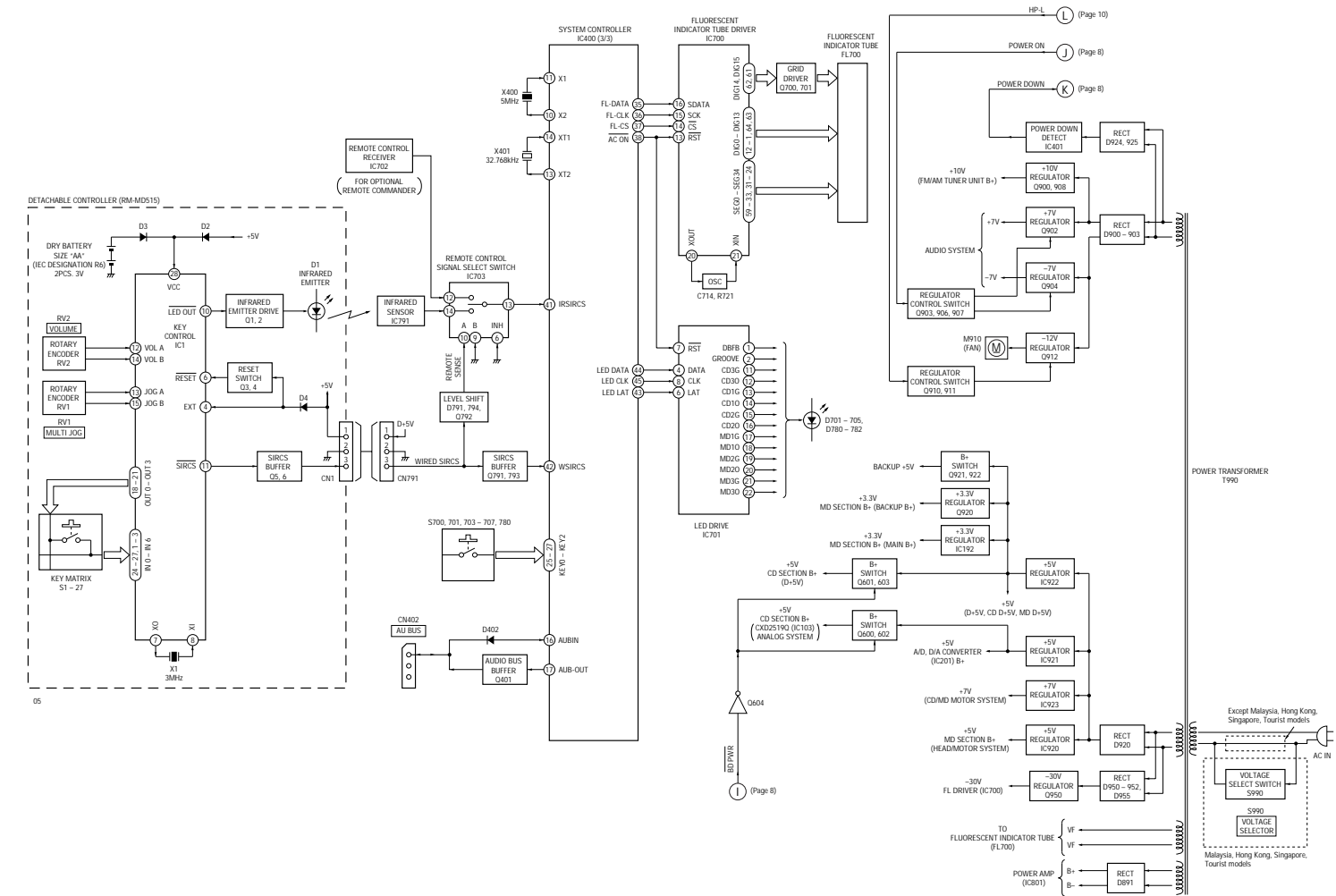


1-4. MAIN Section (2/2)



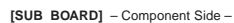
HCD-MD515
RM-MD515

1-5. DETACHABLE CONTROLLER (RM-MD515)/DISPLAY/KEY CONTROL/POWER SUPPLY Section



2-1. New/Former Discrimination


The SUB board has been changed in the midst of production. According to that the AMP board has been modified.



☞ : indicate changed portion.

Page	For
------	-----

	Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
118	△R832	1-247-749-11	CARBON	560	5%	1/2W F	△R832	1-249-408-11	CARBON	180	5%	1/2W F

The components identified by mark  or dotted line with mark are critical for safety. Replace only with part number specified.

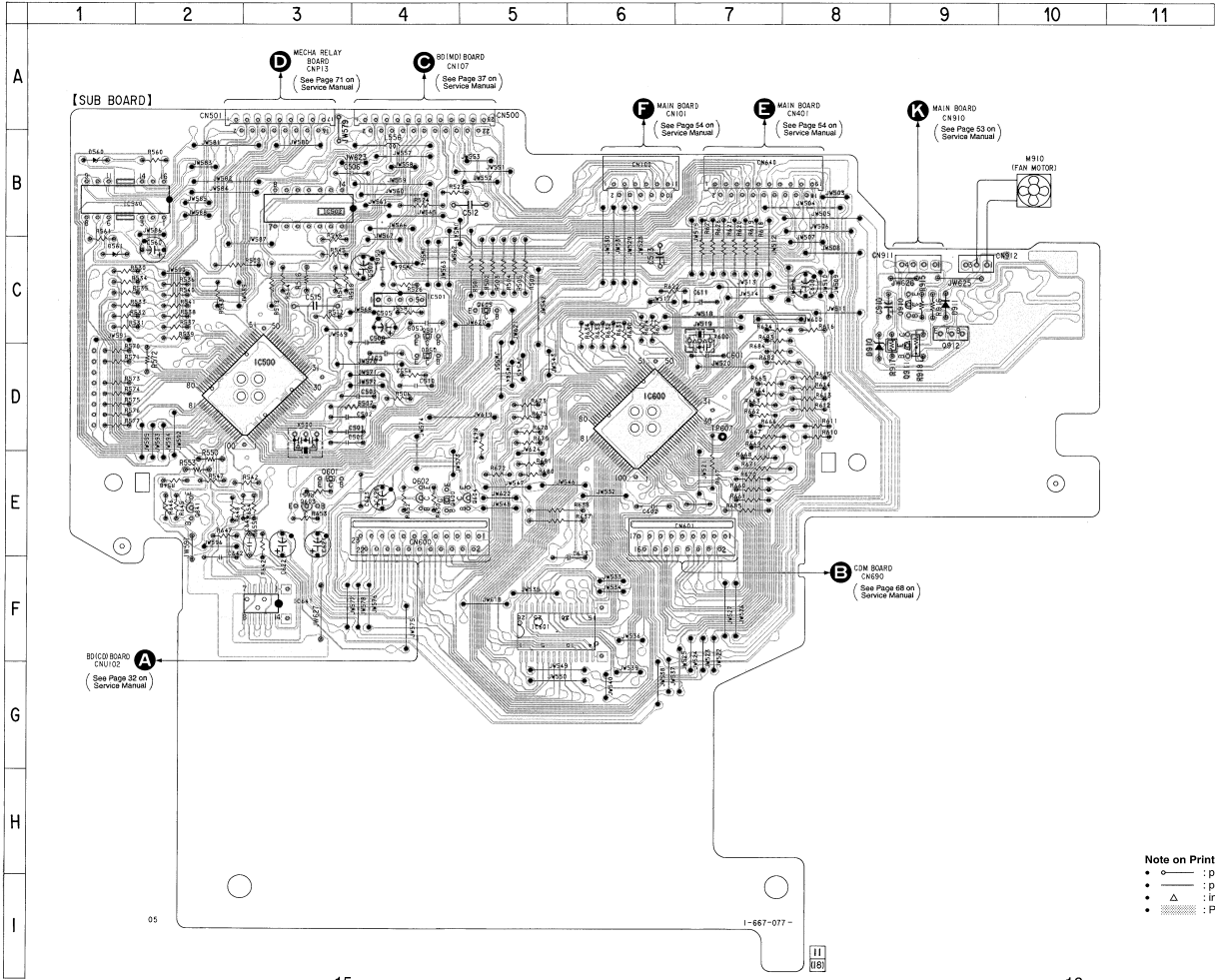
✎ : indicates corrected portion.

	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
117	△.F801		FUSE (4A/250V) (US)		△.F801	1-533-420-11	FUSE, GLASS CYLINDRICAL (DIA. 5) (5A/125V) (US)	
	△.F802		FUSE (4A/250V) (US)		△.F802	1-533-420-11	FUSE, GLASS CYLINDRICAL (DIA. 5) (5A/125V) (US)	

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

HCD-MD515
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2-3. SUB Board
• Printed Wiring Board

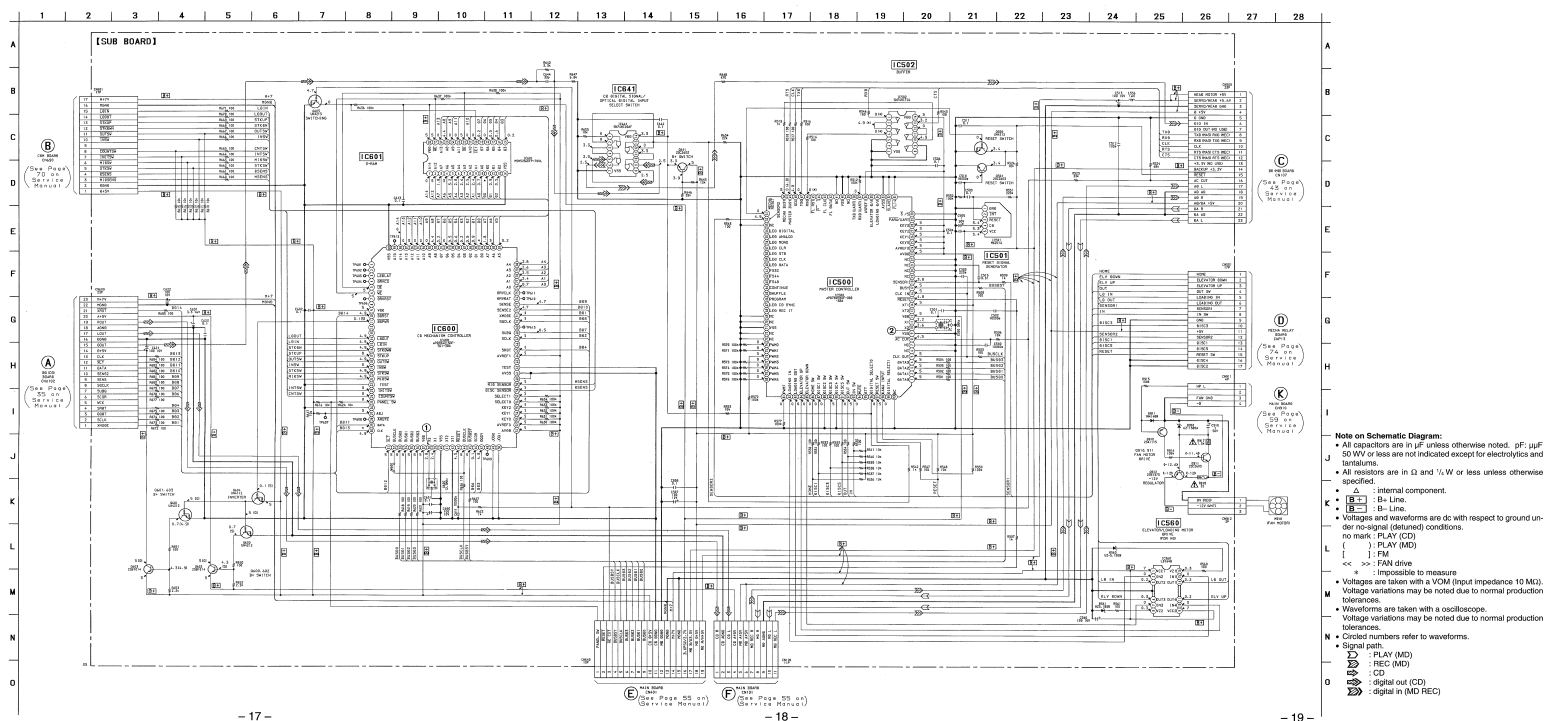


• Semiconductor Location

Ref. No.	Location
D560	B-1
D561	C-1
D910	D-8
D911	C-9
IC500	D-3
IC501	C-4
IC502	B-3
IC560	B-1
IC600	D-6
IC601	F-5
IC641	F-3
Q500	D-4
Q501	C-4
Q600	E-4
Q601	E-3
Q602	E-4
Q603	E-3
Q604	E-5
Q605	C-5
Q641	E-2
Q910	C-9
Q911	C-9
Q912	C-9

Note on Printed Wiring Board:
• — : parts extracted from the component side.
• — : parts extracted from the conductor side.
• Δ : internal component.
• : Pattern from the side which enables seeing.

• Schematic Diagram



• Electrical Parts List

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable

- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA. . . : μ A. . . uPA. . . : μ PA. . .
uPB. . . : μ PB. . . uPC. . . : μ PC. . .
uPD. . . : μ PD. . .
- CAPACITORS
uF: μ F
- COILS
uH: μ H

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-4403-375-A	SUB BOARD, COMPLETE *****				< DIODE >	
		< CAPACITOR >		D560	8-719-923-38	DIODE UZ-5.1BSB-TP	
C500	1-162-306-11	CERAMIC 0.01uF 20%	16V	D561	8-719-923-38	DIODE UZ-5.1BSB-TP	
C501	1-164-159-11	CERAMIC 0.1uF	50V	D910	8-719-010-77	DIODE UZ-13BSA-TP	
C502	1-162-306-11	CERAMIC 0.01uF 20%	16V	D911	8-719-911-19	DIODE 1SS119	
C503	1-162-286-31	CERAMIC 220PF 10%	50V			< IC >	
C504	1-164-159-11	CERAMIC 0.1uF	50V	IC500	8-759-534-94	IC uPD78078GF-082-3BA	
C505	1-126-160-11	ELECT 1uF 20%	50V	IC501	8-759-481-02	IC M62016L	
C506	1-164-159-11	CERAMIC 0.1uF	50V	IC502	8-759-269-08	IC SN74HCT04AN	
C507	1-124-584-00	ELECT 100uF 20%	10V	IC560	8-759-277-68	IC LB1648	
C508	1-164-159-11	CERAMIC 0.1uF	50V	IC600	8-759-480-97	IC uPD784215GF-501-3BA	
C509	1-164-159-11	CERAMIC 0.1uF	50V	IC601	8-759-463-99	IC M5M5256DFP-70XL	
C510	1-162-306-11	CERAMIC 0.01uF 20%	16V	IC641	8-759-927-72	IC TL1591CP	
C511	1-164-159-11	CERAMIC 0.1uF	50V			< COIL >	
C512	1-162-282-31	CERAMIC 100pF 10%	50V	L556	1-408-105-00	INDUCTOR 1uH	
C513	1-126-933-11	ELECT 100uF 20%	10V			< TRANSISTOR >	
C515	1-162-306-11	CERAMIC 0.01uF 20%	16V	Q500	8-729-422-73	TRANSISTOR UN4212	
C560	1-124-584-00	ELECT 100uF 20%	10V	Q501	8-729-620-05	TRANSISTOR 2SC2603-EF	
C600	1-124-584-00	ELECT 100uF 20%	10V	Q600	8-729-422-73	TRANSISTOR UN4212	
C601	1-164-159-11	CERAMIC 0.1uF	50V	Q601	8-729-422-73	TRANSISTOR UN4212	
C602	1-164-159-11	CERAMIC 0.1uF	50V	Q602	8-729-118-01	TRANSISTOR 2SB1116	
C611	1-162-306-11	CERAMIC 0.01uF 20%	16V	Q603	8-729-118-01	TRANSISTOR 2SB1116	
C613	1-164-159-11	CERAMIC 0.1uF	50V	Q604	8-729-900-63	TRANSISTOR DTA124ES	
C620	1-127-550-11	ELECT(SOLID) 3.3uF 20%	16V	Q605	8-729-900-89	TRANSISTOR DTC144ES	
C621	1-124-584-00	ELECT 100uF 20%	10V	Q641	8-729-620-05	TRANSISTOR 2SC2603-EF	
C622	1-124-584-00	ELECT 100uF 20%	10V	Q910	8-729-119-76	TRANSISTOR 2SA1175-HFE	
C623	1-164-159-11	CERAMIC 0.1uF	50V	Q911	8-729-620-05	TRANSISTOR 2SC2603-EF	
C642	1-164-159-11	CERAMIC 0.1uF	50V	Q912	8-729-018-59	TRANSISTOR 2SB1375-LC	
C644	1-102-518-11	CERAMIC 33PF 5%	50V			< RESISTOR >	
C910	1-126-160-11	ELECT 1uF 20%	50V	R501	1-247-807-31	CARBON 100 5% 1/4W	
		< CONNECTOR >		R502	1-247-807-31	CARBON 100 5% 1/4W	
* CN100	1-568-854-11	SOCKET, CONNECTOR 11P		R503	1-247-807-31	CARBON 100 5% 1/4W	
* CN500	1-568-865-11	SOCKET, CONNECTOR 23P		R504	1-247-807-31	CARBON 100 5% 1/4W	
CN501	1-568-860-11	SOCKET, CONNECTOR 17P		R505	1-247-807-31	CARBON 100 5% 1/4W	
CN600	1-691-652-11	SOCKET, CONNECTOR 23P		R506	1-249-429-11	CARBON 10K 5% 1/4W	
CN601	1-691-649-11	SOCKET, CONNECTOR 17P		R507	1-249-417-11	CARBON 1K 5% 1/4W	
* CN640	1-568-862-11	SOCKET, CONNECTOR 19P		R508	1-247-807-31	CARBON 100 5% 1/4W	
* CN911	1-564-519-11	PLUG, CONNECTOR 4P		R509	1-249-417-11	CARBON 1K 5% 1/4W	
* CN912	1-564-518-11	PLUG, CONNECTOR 3P		R512	1-249-441-11	CARBON 100K 5% 1/4W	

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R514	1-247-807-31	CARBON	100	5%	1/4W	R631	1-249-441-11	CARBON	100K	5%	1/4W
R516	1-247-807-31	CARBON	100	5%	1/4W	R632	1-249-441-11	CARBON	100K	5%	1/4W
R517	1-247-807-31	CARBON	100	5%	1/4W	R633	1-249-441-11	CARBON	100K	5%	1/4W
R518	1-247-807-31	CARBON	100	5%	1/4W	R634	1-249-441-11	CARBON	100K	5%	1/4W
R519	1-249-417-11	CARBON	1K	5%	1/4W	R636	1-249-441-11	CARBON	100K	5%	1/4W
						R637	1-249-441-11	CARBON	100K	5%	1/4W
R523	1-249-435-11	CARBON	33K	5%	1/4W	R638	1-249-441-11	CARBON	100K	5%	1/4W
R524	1-249-439-11	CARBON	68K	5%	1/4W	R642	1-247-843-11	CARBON	3.3K	5%	1/4W
R526	1-249-429-11	CARBON	10K	5%	1/4W						
R530	1-247-807-31	CARBON	100	5%	1/4W	R645	1-249-429-11	CARBON	10K	5%	1/4W
R531	1-247-807-31	CARBON	100	5%	1/4W	R646	1-249-436-11	CARBON	39K	5%	1/4W
						R647	1-249-427-11	CARBON	6.8K	5%	1/4W
R532	1-247-807-31	CARBON	100	5%	1/4W	R648	1-249-413-11	CARBON	470	5%	1/4W
R533	1-247-807-31	CARBON	100	5%	1/4W	R650	1-247-807-31	CARBON	100	5%	1/4W
R534	1-247-807-31	CARBON	100	5%	1/4W						
R535	1-247-807-31	CARBON	100	5%	1/4W	R651	1-247-807-31	CARBON	100	5%	1/4W
R536	1-249-429-11	CARBON	10K	5%	1/4W	R652	1-249-421-11	CARBON	2.2K	5%	1/4W
						R653	1-249-421-11	CARBON	2.2K	5%	1/4W
R537	1-249-429-11	CARBON	10K	5%	1/4W	R655	1-249-429-11	CARBON	10K	5%	1/4W
R538	1-249-429-11	CARBON	10K	5%	1/4W	R660	1-247-807-31	CARBON	100	5%	1/4W
R539	1-249-429-11	CARBON	10K	5%	1/4W						
R540	1-249-429-11	CARBON	10K	5%	1/4W	R661	1-247-807-31	CARBON	100	5%	1/4W
R541	1-249-429-11	CARBON	10K	5%	1/4W	R662	1-247-807-31	CARBON	100	5%	1/4W
						R663	1-247-807-31	CARBON	100	5%	1/4W
R542	1-249-417-11	CARBON	1K	5%	1/4W	R664	1-247-807-31	CARBON	100	5%	1/4W
R543	1-247-807-31	CARBON	100	5%	1/4W	R665	1-247-807-31	CARBON	100	5%	1/4W
R545	1-247-807-31	CARBON	100	5%	1/4W						
R546	1-247-807-31	CARBON	100	5%	1/4W	R666	1-247-807-31	CARBON	100	5%	1/4W
R547	1-247-807-31	CARBON	100	5%	1/4W	R667	1-247-807-31	CARBON	100	5%	1/4W
						R668	1-247-807-31	CARBON	100	5%	1/4W
R548	1-249-429-11	CARBON	10K	5%	1/4W	R669	1-247-807-31	CARBON	100	5%	1/4W
R550	1-249-441-11	CARBON	100K	5%	1/4W	R670	1-247-807-31	CARBON	100	5%	1/4W
R551	1-247-887-00	CARBON	220K	5%	1/4W						
R552	1-249-441-11	CARBON	100K	5%	1/4W	R671	1-247-807-31	CARBON	100	5%	1/4W
R553	1-249-429-11	CARBON	10K	5%	1/4W	R672	1-247-807-31	CARBON	100	5%	1/4W
						R673	1-247-807-31	CARBON	100	5%	1/4W
R560	1-247-807-31	CARBON	100	5%	1/4W	R674	1-247-807-31	CARBON	100	5%	1/4W
R561	1-247-807-31	CARBON	100	5%	1/4W	R675	1-247-807-31	CARBON	100	5%	1/4W
R570	1-249-441-11	CARBON	100K	5%	1/4W						
R571	1-249-441-11	CARBON	100K	5%	1/4W	R677	1-247-807-31	CARBON	100	5%	1/4W
R572	1-249-441-11	CARBON	100K	5%	1/4W	R678	1-247-807-31	CARBON	100	5%	1/4W
						R679	1-247-807-31	CARBON	100	5%	1/4W
R573	1-249-441-11	CARBON	100K	5%	1/4W	R680	1-247-807-31	CARBON	100	5%	1/4W
R574	1-249-441-11	CARBON	100K	5%	1/4W	R681	1-247-807-31	CARBON	100	5%	1/4W
R575	1-249-441-11	CARBON	100K	5%	1/4W						
R576	1-249-441-11	CARBON	100K	5%	1/4W	R682	1-247-807-31	CARBON	100	5%	1/4W
R577	1-249-441-11	CARBON	100K	5%	1/4W	R683	1-247-807-31	CARBON	100	5%	1/4W
						R684	1-247-807-31	CARBON	100	5%	1/4W
R610	1-249-429-11	CARBON	10K	5%	1/4W	R685	1-247-807-31	CARBON	100	5%	1/4W
R611	1-249-429-11	CARBON	10K	5%	1/4W	R915	1-249-441-11	CARBON	100K	5%	1/4W
R612	1-249-429-11	CARBON	10K	5%	1/4W						
R613	1-249-429-11	CARBON	10K	5%	1/4W	R916	1-249-441-11	CARBON	100K	5%	1/4W
R614	1-249-429-11	CARBON	10K	5%	1/4W	△ R917	1-249-419-11	CARBON	1.5K	5%	1/4W F
						△ R918	1-219-786-11	FUSIBLE	22	5%	1/4W F
R615	1-249-429-11	CARBON	10K	5%	1/4W						
R616	1-249-429-11	CARBON	10K	5%	1/4W						
R617	1-249-429-11	CARBON	10K	5%	1/4W						
R618	1-247-807-31	CARBON	100	5%	1/4W						
R619	1-247-807-31	CARBON	100	5%	1/4W						
R620	1-247-807-31	CARBON	100	5%	1/4W						
R621	1-247-807-31	CARBON	100	5%	1/4W						
R622	1-249-417-11	CARBON	1K	5%	1/4W						
R624	1-249-429-11	CARBON	10K	5%	1/4W						
R626	1-247-807-31	CARBON	100	5%	1/4W						
R627	1-247-807-31	CARBON	100	5%	1/4W						
R630	1-249-441-11	CARBON	100K	5%	1/4W						

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

